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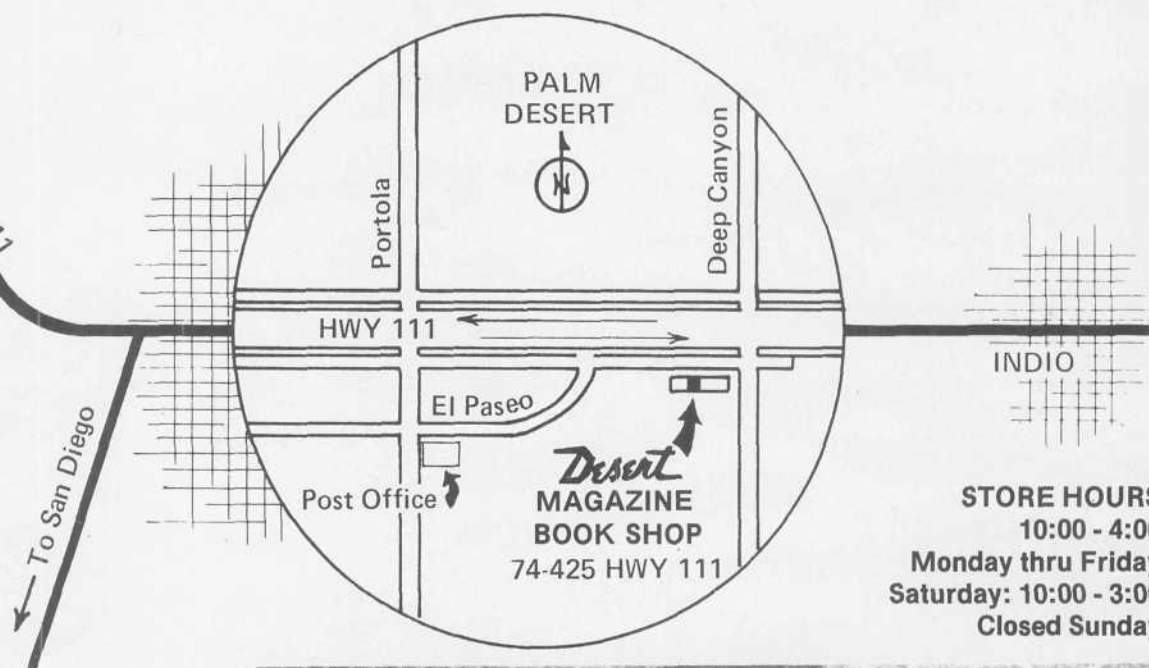
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THE COVER:  
"Canyon Palms," an original  
30"x24" oil painting created  
for the cover by Kathi Hilton,  
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## A Peek in the Publisher's Poke

contract for greeting cards. She has also been invited to the Frank Tenney Johnson Memorial Show at the Gene Autry Hotel in Palm Springs sometime in March.

Congratulations, Kathi!

So much for artists, but what about photographers? Well, long-time *Desert* contributor and desert lover, Ernie Cowan, after many years as a journalist for a San Diego newspaper, opened a photography shop in Escondido, Calif., and now has very little time to do what he likes best, trekking around in the great outdoors! Consequently, he takes vacations when time permits, leading to the feature on page 24, "Winter Vacations Are Fun!"

We are pleased to have him back in *Desert*, and that he is doing a whale of a job with his business.

Speaking of whales, which we did in May, '77 about the possibility of substituting the nuts from the jojoba plant for sperm whale oil, this has come a lot closer to reality with the recent planting of 20,000 seedlings on the north side of Lake Perris in California.

The project is in cooperation with the state Parks and Recreation Department, and is also adding to the landscaping around the lake. The jojoba, native to Southern California, Arizona and Mexico, is about eight feet tall when mature, and looks like a giant shrub.

The wind-pollinated, bisexual plant does produce flowers, but they are not showy and distinctive. It will grow in just about any soil, providing the elevation is below 4,000 feet and temperature is above 20 degrees Fahrenheit.

*William Kuyper*

IT ALWAYS makes me feel good when a friend finds success. With artists, it often entails many, many years before they become established or "known." Our cover artist this month, Kathi Hilton, is a great example of a person whose time has come. Since being featured in our November, 1978 issue, with photography by Brian Nutter, she has had two very rewarding showings in Death Valley and at the Saddleback Western Art Gallery in Santa Ana, California. She will soon be featured in the prestigious *Southwest Art* magazine, and is under



Ernie Cowan at work.

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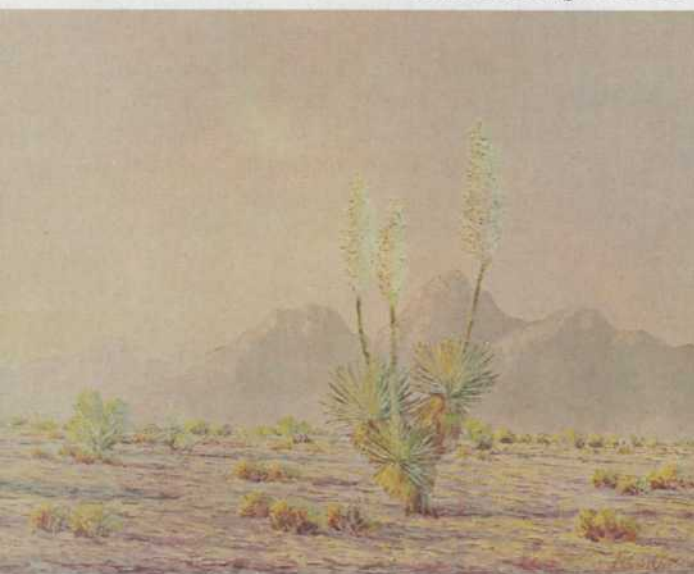
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"Flowering Dunes"

"Wickenburg Yuccas"



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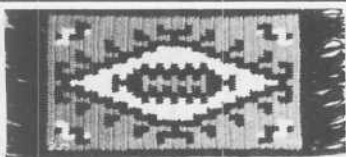
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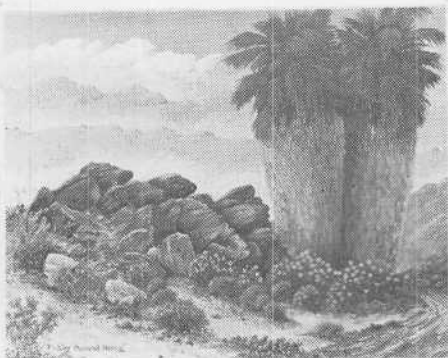
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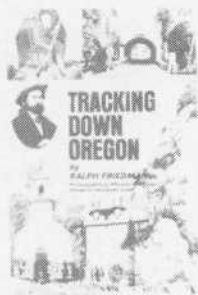
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# Books for Desert Readers

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### TRACKING DOWN OREGON

By Ralph Friedman

A book about Oregon reviewed in Desert Magazine?

Why not, more than half of Oregon, east of the Cascades, is high desert and this little book from the Caxton Press, Caldwell, Idaho, describes the history

and color of many of the out-of-the-way places and how to get there.

Friedman writes with great humor and compassion for his beloved state. This is his fourth book about the hidden nooks and crannies of California's northern neighbor, profusely illustrated by his wife, Phoebe, and with many historic pictures out of the archives.

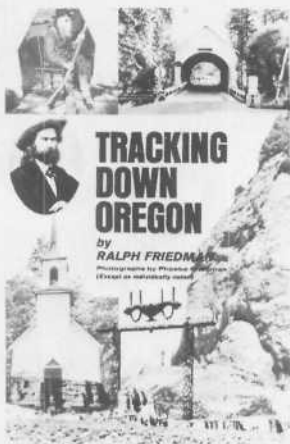
Oregon's history is fully as rich and devious as California's, with the same roots in the Gold Rush, to be sure, but an equally long past stemming from sea expeditions and the overland and river migrations of the fur trappers.

Friedman weaves in many Indian tales with his Anglo-Saxon yarns, particularly, a momentous war shared with California, the Modoc, which raged fitfully from about 1872 until 1873 and ended with the hanging execution of its Indian primary figure, Captain Jack, leader of the Modocs.

Friedman also recounts the story of the Oregon Trail, not the one you normally think of, that brought the original settlers in the 1840s from the east through Utah and northwesterly. Oh, that trail is covered, too, but there is another, the Old Oregon Trail, which took people back and forth to Washington and maybe even to British Columbia and maybe even to Alaska. That's the kind of stuff Friedman tells.

Another story, that Friedman admitted he stumbled on by accident, relates how one of the Earp boys, Virgil, brother of Wyatt, found his way out of Tombstone, Arizona, and the California desert into Oregon, where he up and died and was buried in Riverview Cemetery in Portland. Friedman was tracking down another oldtimer when he found that the illustrious old miner, marshal, gunfighter and whatever else was buried there, too.

"Tracking Down Oregon" is a 306-page paperback, filled with photographs and sells for \$5.95.



ISBN 0-87004-257-2  
306 Pages 6" x 9"

Paperbound  
\$5.95

Oregon, says author Ralph Friedman, is more than places and names on the map. "It is people, past and present, history, legend, folklore. . . ." So we invite you to track along with him, in this new book from Caxton, to encounter the rare and unusual in Oregon, "to locate a waterfall seen only by a few, to hunt out a burial ground soaked with the juices of history, to discover the amazing Jim Hoskins of Pilot Rock, the tragic Captain Jack, the remains of Fairfield, the cavalry names etched on a desert bluff, the legend of a gunslinger. . . ."

**bxc**

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BOOKS



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**WILLIE BOY**  
By Harry Lawton

A desert classic, a prizewinner, the story of an incomparable Indian chase, its unexpected conclusion, woven into an authentic turn-of-the-century history of the Twentynine Palms country.

Willie (or Billy) Boy was a Southern Paiute Indian who took his bride according to tradition, by capture but had to kill her father in the process, thus triggering a lengthy and thrilling manhunt across the San Geronio Pass and the huge Twentynine Palms basin. He also had to kill his bride to prevent her capture and his own.

Willie Boy led the sheriff and his posse across some of the most hostile desert in California, he on foot and the pursuers mounted on horseback! Pride and the necessity of a political victory kept the posse going but the ultimate victory—for his courage, intelligence and stamina—went to the Indian.

The chase was complicated by the presence of U. S. President William Howard Taft in Riverside County during the height of the drama, and was accurately reported by a newspaper writer accompanying the posse.

The author, a longtime newspaperman himself, received the coveted Phelan Award for western history for this book, and it was later made into a movie starring Robert Redford, Katherine Ross, Susan Clark and Robert Blake.

Originally published by Horace Parker's Paisano Press, the book was recently published by the Malki Museum Press, Southern California's only Indian publishing house, a tribute to the accuracy of its Indian portrayals.

*Willie Boy* offers rare insights into Indian character and customs, as well as a first-hand look at a colorful desert region as it was nearly a century ago.

Contains illustrations by Don Perceval, several historic photographs and colorful maps. Paperback, \$4.95.

Central Arizona



**CENTRAL ARIZONA GHOST TOWNS**  
By Robert L. Spude  
and Stanley W. Paher

The vast central mountain and desert region of Arizona—roughly from Phoenix northward and northwesterly to the historic Prescott Basin—contains some of the most colorful old mines and abandoned towns of the southwest.

This large-scale volume offers accurate maps, authentic descriptions and rare photographs for the armchair explorer or the active rockhound and off-roader. It lists more than 50 old towns or mining districts, arranged alphabetically and grouped by geographical location.

Many of them are familiar names, such as the Vulture, the Congress, the Crown King and perhaps even the Jersey Lily! But there are many more most readers are learning about for the first time. Some of the mines are associated with famous people; others are as obscure as their discoverers. A few still exist as treasure dumps for rockhounds or in transition from one mineral search to another.

A word of warning! Many of these mines and abandoned towns are dangerous to seek out, due to inhospitable terrain, abandoned roads and sometimes hostile owners. But there's always this book to fall back on for accurate and easy access without the bother of blowouts, rattlesnake bite or heat exhaustion.

The book offers, also, first hand information on railroads and old highways of historic Central Arizona. Hints for desert travel and hot weather survival as well as recommended additional reading are contained in the back of the book.

Author Spude has covered all this region first class, on foot! His co-author, Stanley Paher, is a specialist in Nevada history and mining lore in general. The combination has provided a readable and very useful guide to a little-known but highly accessible region.

Paperback, 50 pages, \$2.95.

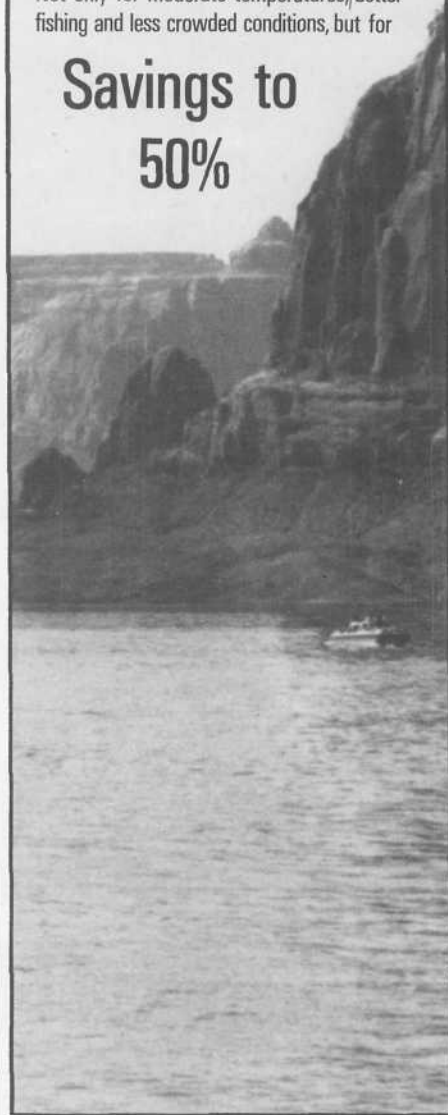
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*A view of some of the few remaining structures at Kelly, New Mexico. The tall headframe is Kelly Mine shaft.*

# Kelly, New Mexico

by MARK C. BLAZEK

**A**MONG THE most popular ghost towns in New Mexico is a small, deserted mining camp south of Magdalena in the southwest part of the state. The camp, nestled on the western slopes of the Magdalena Mountains, is called Kelly. Although merely a haven for ghosts today, Kelly was once the site of a bustling community of 3000 residents feverishly burrowing into the countryside in search of mineral wealth.

The town of Kelly began to unfold shortly after J. S. Hutchason (known as

"Old Hutch" among the mining fraternity) discovered rich lead outcroppings in 1866. The spring of that year saw the opening of the Juanita Mine, Hutchason's first claim, and, indeed, the first claim staked in the Magdalena district. Three weeks later the celebrated Graphic Mine began production.

In 1870 a townsite was laid out. The town was called Kelly after Andy Kelly, a friend of Hutchason's who operated a local sawmill. During the 1880s Kelly experienced much growth. In 1883 a post

office was established and stagecoach routes were developed to and from Kelly. Churches, hotels, schools and the usual assortment of stores and saloons quickly sprang up. The first ores mined at Kelly were lead minerals. The Magdalena district yielded an estimated \$7,000,000 to \$9,000,000 worth of lead from 1880 to 1902, most of which was produced before 1890.

Just as Kelly was beginning to "die" around the turn of the century, C. T. Brown, the leading mining engineer in



Socorro County, sent some samples of a strange greenish-blue rock off to Kansas City for assay. The strange rock turned out to be smithsonite, a rich zinc carbonate. Thus, Kelly's second era of prosperity began as it reaped the profits of the zinc-bearing smithsonite. Because of smithsonite, Kelly soon became the leading producer of zinc in New Mexico. Only two other zinc mining camps in the entire Rocky Mountain region—Leadville, Colorado, and Butte, Montana—could match the output of Kelly. For a time Kelly alone was responsible for a third of the total mineral production in New Mexico due to the smithsonite. Between 1904 and 1928 close to 22 million dollars was recovered from the mines.

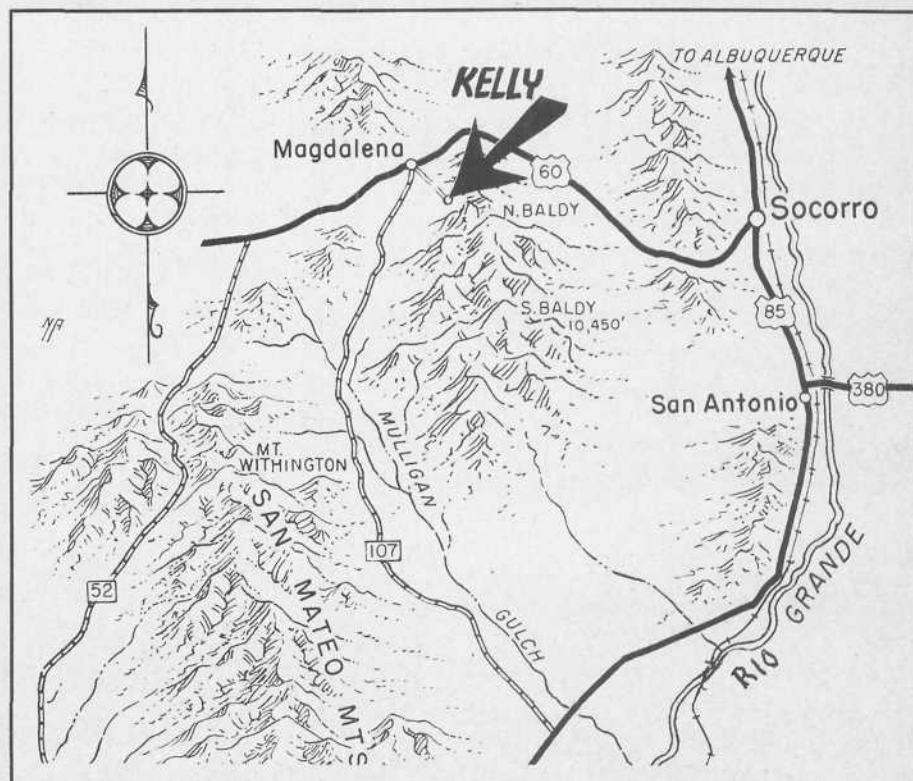
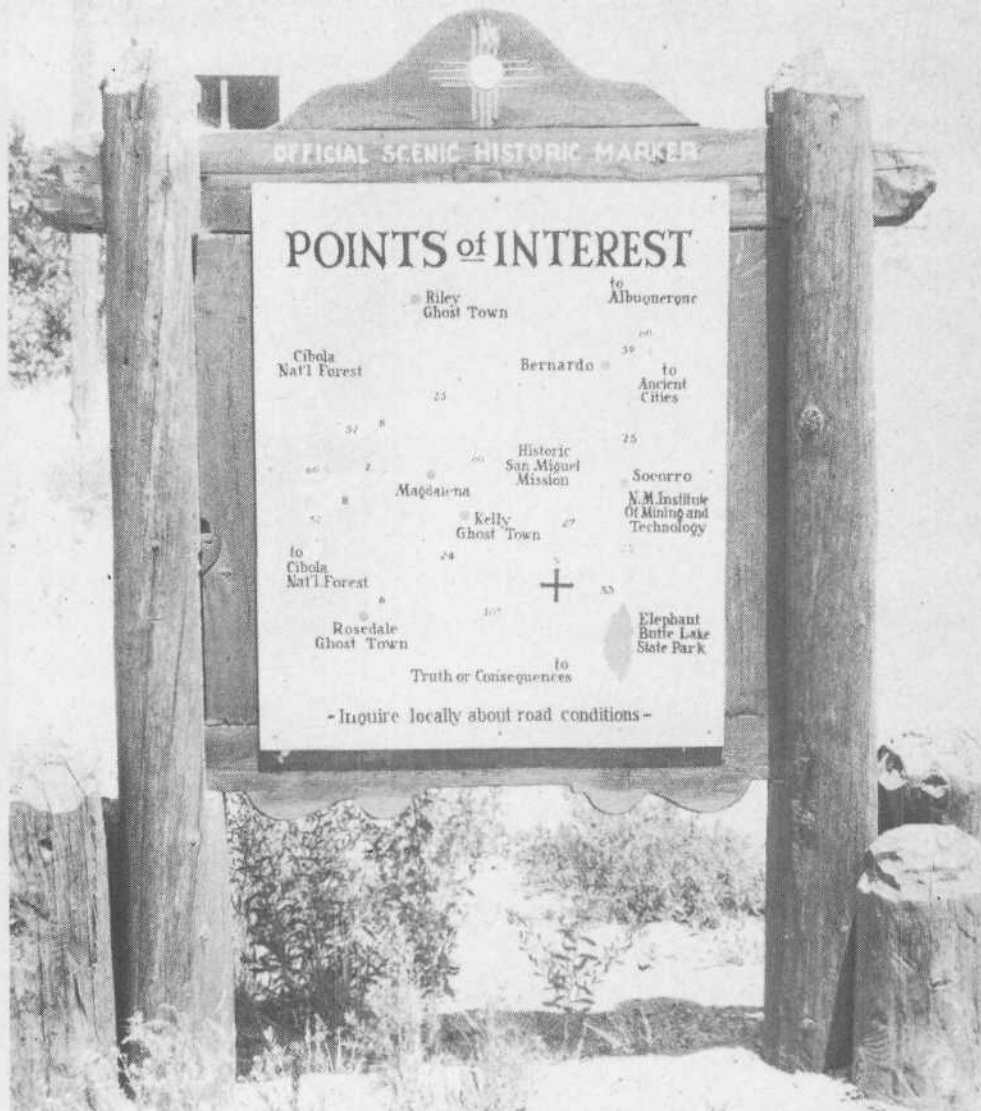
Eventually, Kelly faced the inevitable doom of all mining camps—the smithsonite deposits were exhausted in 1931. Very slowly in the following years, mining throughout the Magdalena district began to decrease. And Kelly, once a flourishing mining camp with a population of 3000 died.

Today, Kelly can easily be reached by approaching Magdalena from the east or west via Highway 60. A well-graded dirt road (easily passable by passenger cars) leads from Magdalena to Kelly, three miles south. This road (located by the Cibola National Forest ranger station) is marked as Poplar Street, but is known locally as Kelly Mine Road. The only remaining intact building is a small, single Catholic church with the typical white-stucco front. Once a year (during "Kelly Days Celebration") mass is offered in this church. The area around the church makes a convenient parking lot.

You may then walk the road beyond the church, up Kelly Canyon, to explore some of the extensive mine workings, tailing dumps, old mine buildings, headframes, etc. Some of the mine dumps are a rockhound's paradise. Good specimens of smithsonite, for which Kelly is most noted, can be found on the dumps along with a host of other minerals and fossils. Rockhounds will surely delight, not only in roaming the dumps but, also, in visiting the several rock shops in Magdalena.

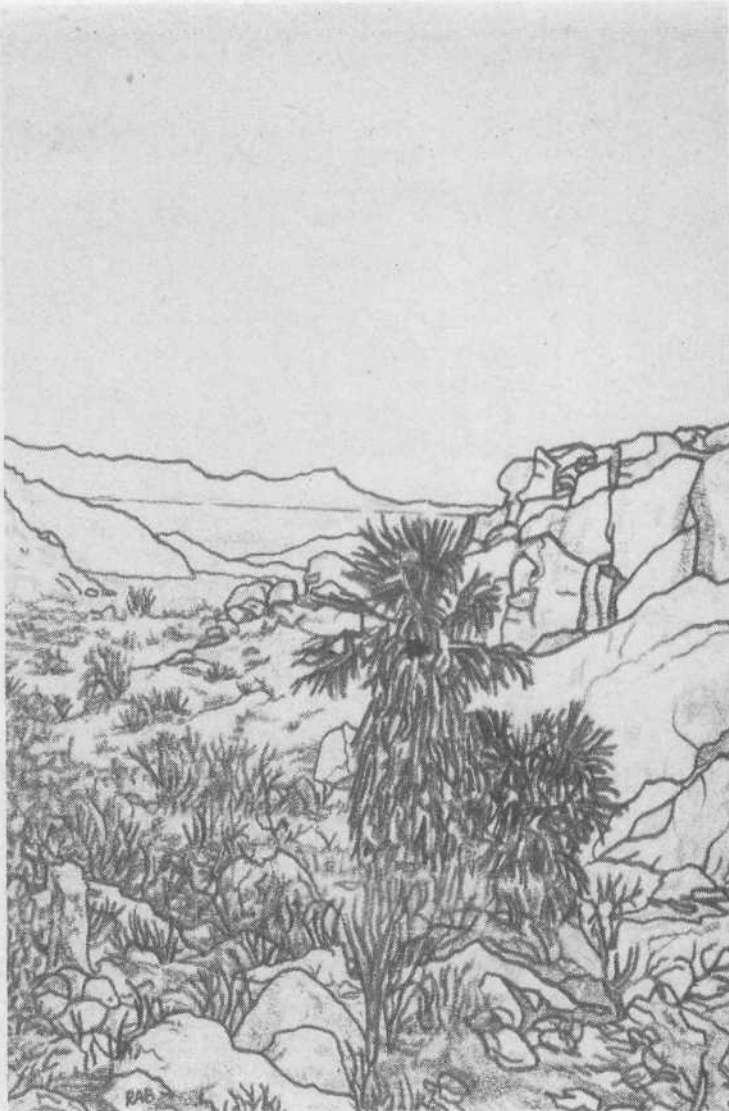
A special note for photographers: be sure and visit Kelly with a full load of color film. The scenery and relics in the area are truly spectacular.

Will mining ever resume at Kelly? Who knows? Who knows! ☐



# North Indian Valley

by DICK BLOOMQUIST



North Indian Valley.  
Pencil sketch by author.

INDIAN VALLEY is a desert Shangri-La. Who would guess that a basin three miles wide somehow lay concealed between the rocky mountain ridges south and west of Palm Spring and Highway 52?. The whitish cleft of Indian Gorge, three miles south of Palm Spring turnoff, provides access to this hidden world of elephant trees, Indian signs and native Washingtonias. The palms grow in canyons at the north and south ends of the valley within the Anza-Borrego Desert State Park; we'll examine the south fork oasis in the next article in this series.

Because of sand and occasional rocks, the route through Indian Gorge is best attempted in a four-wheel-drive rig. Near the far end of the defile, narrow Torote Canyon enters from the right. *Torote* is the Spanish word for elephant

tree, and dozens of the plants—rare in the United States—thrive along the slopes of this tributary watercourse. The rough wash can be driven for only a few yards, but the hiking is easy beyond road's end.

I walked to one specimen a short distance upstream. It was about eight feet tall, with a trunk nine inches thick near the base. The bole and lower limbs seemed ponderous and swollen when contrasted with the delicate, reddish upper branches. The species takes its name from this thickened appearance of its lower parts, which, with imagination, can be likened to the trunk and legs of an elephant. Near ground level the brownish, parchment-like bark was peeling away. The elephant tree (*Bursera microphylla*), really a massive shrub rather than a tree, is one of the desert's rarest

and strangest plants. In the United States it grows only in California and Arizona; California's torotes are concentrated near Indian Gorge, Mountain Palm Springs and Split Mountain, all in the Anza-Borrego country.

Just beyond Torote Canyon the walls of Indian Gorge fall away and Indian Valley is born. Here we enter a different world, one set apart from the open desert east of the gorge. The valley is spacious, yet the encircling peaks and ridges have made it a snug harbor where winds are muted and skies are a deeper blue. Smoke trees clog the neck of land where gorge and valley meet, and on the left a low saddle borders the roadway. At the far end of the saddle, rock markers edge an old pottery-dotted Diegueno trail which runs southward for a third of a mile or so to Palm Bowl. Later in this



series we'll hike to the Bowl, approaching it from the east via Surprise Canyon.

Two-thirds of a mile past the Indian trail, our road divides. The right fork leads to the oasis in North Indian Valley — two small *Washingtonias* at the mouth of a rock-ribbed canyon. There may be a few additional palms farther upstream. The trees—between 10 and 15 feet tall—stand guard, side by side, their ground-length fronds blending. Mesquite, catsclaw, desert lavender, brittle-bush, chuparosa, buckwheat, sage, mescal, ocotillo and desert apricot, along with barrel, hedgehog and beavertail cacti, green the surrounding terrain.

No moisture breaks the surface, but a

#### MILEAGE LOG

- 0.0 Junction of San Diego County Road S2 and dirt road to Palm Spring in southern part of Anza-Borrego Desert State Park. Drive south on S2 toward Interstate Highway 8.
- 3.1 Turn right off S2 onto dirt road. A small yellow-topped state park signpost marked "Indian Gorge" identifies the junction. **Four-wheel-drive recommended.**
- 3.7 Enter Indian Gorge.
- 4.7 Torote Canyon (elephant trees) comes in from right. Continue straight ahead.
- 4.9 Indian trail leads over low saddle on left to Palm Bowl. Continue straight ahead. In this vicinity Indian Gorge ends and Valley begins.
- 5.6 Fork. Bear right. (Left branch leads into South Indian Valley.)
- 8.2 Road ends a few yards below palms in North Indian Valley. Elevation at oasis approximately 2140 feet.

man-made tank and section of pipe indicate that cattle once watered here. The silt-choked rock tank was built by the McCains, a pioneer ranching family of east San Diego County.

A far-reaching prospect of Indian Valley, the Carrizo Badlands, and the Fish Creek Range spreads out below the palms. On a clear day the Salton Sea and Chocolate Mountains color the north-eastern horizon.

We'll backtrack now to the road fork near the valley's mouth and reconnoiter the larger oasis of wild palms in South Indian Valley.

[POSTSCRIPT: On my last visit I found that both the North Indian Valley palms had died. I am not sure whether the canyon contains more *Washingtonias* farther upstream or not; if so, some or all of these trees may still be alive.] □



## THE ANZA-BORREGO DESERT REGION

### A Guide to the State Park and the Adjacent Areas

*By Lowell and Diana Lindsay*

At last a current and comprehensive guide to Southern California's most popular desert playground has been written. There has long been a need for such a guide to the Anza-Borrego/Yuha Desert, which annually receives more than a million visitor-use-days. This area, much of it wilderness, covers a third of San Diego County and portions of Riverside and Imperial counties from the Santa Rosa Mountains to the Mexican Border.

In its more than a million acres, about equally divided between the Anza-Borrego Desert State Park (the nation's largest state park) and BLM's Yuha Desert Unit (containing the site of possibly the earliest human remains in North America), the Anza-Borrego region appeals to a broad range of outdoor enthusiasts: backpackers, dune-buggy drivers, hikers, horsemen, nature seekers and campers.

From prehistoric Indians through weekend vacationers, men have called this desert home, some for all of their time, others for some of their time. From piney mountain crags to a windy inland sea, a rich variety of desert plants and animals dwell, in terrain and landforms as different as their inhabitants.

The book contains a large foldout map, providing an overall view of the region, and also detailed maps showing the most popular hiking and backpack areas. A section on arid-area travel and special precautions adds to the desert explorer's enjoyment and safety. Sixty-five trips along 700 miles of jeep trails, paved roads, and hiking routes are described, giving details of over 300 points of historic and natural interest.

The guide was written in cooperation with the California Dept. of Parks and Recreation, the Anza-Borrego Desert Natural History Association and the U.S. Dept. of the Interior, Bureau of Land Management (BLM), Riverside District Office.

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# Miracle Waters of California's Southernmost Valley

by MARIAN SEDDON

**T**HE THREE letter word "spa" is easy to spell and each of the three spas in California's Imperial Valley spell "easy living." All three — Lark, Bashford's, Fountain of Youth — are RV parks with mineral water pools, rent space by day, week, month or year and all are located between the below-sea-level Salton Sea and the towering Chocolate Mountains.

Easy living doesn't mean inactivity. Pools splash from before sunrise to the ten o'clock closing time. Shuffleboard and horseshoe enthusiasts abound. Along county roads between spas joggers and bicyclers make their way singly and in groups. Hikers walk the

lonely, unpathed desert and hear calls of quail, coyote and brays of wild donkey.

Diversity of life styles, ages and interests is the norm at these spas. Consider partially disabled Rattlesnake Sam, age 78, and sometimes called Mr. Norfolk. The pearly jewel dangling from Sam's ear is one of many balancer bones he extracts from Salton Sea's corvina and facets into jewelry. Sam's skills include repairing false teeth and cooking. His favorite vegetable — zucchini — is used in salads, pickles, casseroles and bread.

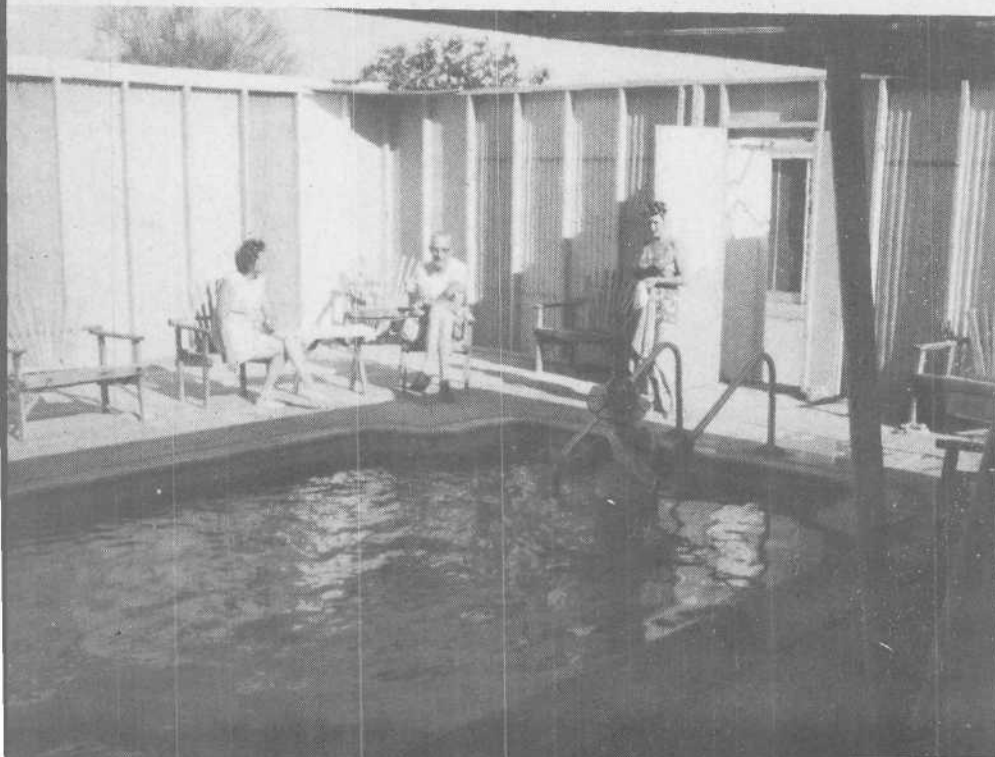
Consider also Oregon campers, Carl and Julia D., in their late 80s and their hobbies of rock hunting, jewelry facet-

ing and carpentry. Carl also keeps their mobile home surrounded by nasturtiums and marigolds. His purple petunias set the spas central area aglow. The Ds drive a camper from Oregon and tow a small car.

Among young adults are two women, a Canadian and a New Yorker, whose individualism allows them to arrange careers so they can winter at the spas.

Individualism and diversity shows in the spas vehicles — limousines, Jeeps, trucks, dune buggies, motorcycles — bearing licenses from all over United States and Canada. Living quarters are equally diverse, ranging from glamorous mobile homes to tiny trailers, even to tents.

What induces thousands to leave comfortable homes to live in cramped quarters in a cactus-studded desert? Wanderlust is the campers' common denominator. But why so many returnees to these desert spas? Ask pool bathers, sun baskers or hikers on the stony desert. Actually without asking you'll be



Warm mineral pool  
at Lark Spa.



*Pool and cabana area  
at Fountain of Youth Spa.*



the other two turn onto Mineral Hot Spa Road. Huge signs mark the way. The nearest town is Niland.

Fountain of Youth Spa dates to the 50s after J.T. Trily and Frank Domeno, present manager-owners, tramped desert and mountains for weary months looking for an artesian spring. Stung by insects and burned by sun they collected water samples from several promising looking areas. Then thousands of dollars went for geologists' opinions. But drilling resulted in dry wells. Finally a water dower selected a site where the men had collected water samples. This site, now Fountain of Youth well, continues to yield 237° water at 250 gallons per minute.

Today Fountain of Youth has two recreation centers for dinners, dances, exhibits, bingo, classes, TV and socializing. Of its five outdoor pools, three are therapeutic with bubbling jets. In the two steam rooms steam-devotees sit or lie on benches, engulfed in vapor from water flowing under slotted floors. Conveniences include a grocery and general store, barber and beauty shops, laundry and a massage room. Fountain of Youth welcomes children but reserves recreation rooms and the two upper level pools for adults.

Bashford's Hot Mineral Adult Spa appears so close to a Chocolate Mountain peak that your trailer door seems to scrape against it. This "big, rock candy

surrounded by testimonials about the benefits of dry air, desert sun, mineral water and the relaxing yet stimulating aura of the spas.

Most testimonials involve health. A woman with limited arm and hand use due to a complicated bone break tells of vast improvement in movement after three weeks at the spa. A laughing, dark-eyed couple speak in halting English of their weekly drive from Mexicali because the therapy pools, swimming and steam help the young mother recover from severe arthritis.

"My doctor suggested mineral springs," says a man, not yet 50 but relying heavily on a cane. Due to heart attacks and war-related problems he'd been chair-bound for eight years. "My wife, daughter and I moved here six months ago. In four days I was walking with two canes. Now I use no cane around my house. What happened? I only know I'm walking after eight years."

A couple in their forties boasts of a combined 35 pound weight loss in four

weeks. "Ray lost the most — 25 pounds," admits still plump Norma. "It's been fun with the steam, swimming, hiking and everyone's encouragement." Musingly she repeats, "It's been fun — losing weight."

To reach these fun-filled spas follow Highway 111 paralleling the Salton Sea. For Lark Spa turn onto Frink Road. For



*Upper level pool at  
Fountain of Youth Spa.*



*Left:  
Individual  
mineral water  
tubs at  
Bashford's  
Spa.*

*Below:  
Lower level  
swim pool  
with two  
therapy pools  
nearby at  
Fountain of  
Youth Spa.*



mountain" turns dark brown in twilight, brightens into gold at dawn (one camper insists it's "peanut butter color") contrasting with slate blues and purples of distant Chuckwalla and Orocopia Mountains. Bashford's has, besides therapeutic and swim pools, a row of individual, open air, unchlorinated, mineral, Roman-style baths. The Bashfords obviously enjoy their spa. "Look in on our classes," urges "Bash." "Especially one called rhythmic calisthenics. And the musical talent here! At L's 70th birthday there were guitars, drums, a violin. After that party I bought those drums you're hearing now, for our recreation room."

At Lark, smallest of the spas and nearest the Salton Sea, tenants return year after year to swim, fish, explore and renew friendships. Lark's interest in curative desert plants has spread. Aloe vera, a cactus, is used to relieve burns, sores, as a cosmetic and is imbibed to cure stomach disorders. Teas are made from creosote and Ephedra (called chaparral and squaw tea in stores) and other desert plants. Proclaiming Lark's credo is a rock plaque — "Where Every Day is a holiday."

Hoping to open soon is the former Maisson Spa on Davis Road near the end of Salton Sea, renamed Wild Goose for the Honkers and Canadian Snow Geese wintering in nearby Wister Wild Life Refuge. But restoration of its artesian wells and bubbling mud pots has been complicated by unusual floods of '76 and '77. Owner Frank Bucciari, who operates a camping supply store in Niland, lives at his spa in a large adobe building, originally a dry ice plant. Dry ice is made from carbon dioxide, a gas within mineral water. Other gases sometimes present — radon, helium, hydrogen — are being tested by Scripps Institute to predict earthquakes.

The second soon-to-open RV spa is across the road from Bashford's on the site of Old Spa. Long ago used by Cahuilla Indians, Old Spa was found in '38 by Coachella Canal workers looking for water to mix with concrete. But this water mineral was so hot it needed settling pools for cooling. Ten years later Old Spa was rediscovered by Highway 111 workers who told of the pools' healing and soothing qualities. Thousands of campers came to soak in pools and sit in primitive steam rooms. Some lay in mud



contending relief from ailments, particularly arthritis.

In those happy 50s, winter evenings were lively with music, speeches, skits and outdoor dances. During warm, winter days swimming, soaking and steaming were available to wheel-chair-bound, for the able helped the disabled. But degeneration came in the '60s. Among the thousands were a few surly campers. Yet, exact reasons for Imperial County decreeing that campers vacate Old Spa by April 1, 1964 are still unresolved. On that sad April Fools Day elderly campers in rickety trailers were hoping for a reprieve that never came. Among them were two Indian women chanting an ancient Cahuilla curse! Present owner, Charles Forkner, ignoring Cahuilla curses, prepares to open Imperial Hot Mineral Spa.

Many spa residents know the history of Imperial and Coachella Valleys and that turbanned Sikhs and Punjabs once supervised virgin plantings of citrus, dates and cotton some 70 years ago. A plaque in one date grove states its 1903 beginnings from Algerian seedlings.

However, history of California's southernmost valleys stretches back to Conquistador Hernando de Alarcon's visit, 40 some years after Columbus' voyage. Two hundred years later Jean Bautista de Anza's marchers encountering sand storms and heat, called their trail "Camino del Diablo." Then a '49er, New Orleans doctor, hoping to repair fortune and health, crossed the valley on a donkey. Though nearly dying from thirst, Dr. Wozencraft realized this below sea level desert was enormously productive and tried for the rest of his life to convince Congress to fund Colorado River control. He failed. But word of the valley's potential spread. By 1900 pioneers were growing cotton, beets, alfalfa, citrus, carrots and other crops. These farmers suffered through the 1905 floods which changed Salton Sink (where salt was scooped onto railroad cars) into Salton Sea. Now Boulder Dam tames the Colorado and the valleys produce lush, year-round crops envisioned by the frail, donkey riding doctor.

Conversation at the spas often concerns these crops. With owners' permission, campers sometimes glean harvested fields of vine-ripened raisins, fallen dates, over-looked onions and

other foods. Campers also experiment with preparation and preserving. Sun drying — onions, carrots, even cantaloupes, and other foods — is popular.

Other do-it-yourself ideas are rife. Plastic bottles become sun hats worn even when swimming. Soil-filled tires become steps or minature gardens. Sharing skills extends to opinions and travel experiences. Bathers absorb minerals from waters, vitamin D from sun rays and stimulation from each other. Conversation between older and younger groups includes respectful listening and teasing banter on both sides.

Interests expand into humane concerns, shown so richly at Old Spa. An ill man had three offers to overnight in neighbors' homes after paramedics (arriving in minutes) deemed hospitalization unnecessary. Considering the many here for health reasons, these emergencies are few.

That health does improve may be linked not only to dry air, healing waters and friendly campers, but to fascinating surroundings. For sport there's fishing for sargo, croakers and corvina in Salton Sea, three fish-rich lakes — Wiest, Rmer, Finny and hunting for quail, rabbit and ducks. For sightseers, rock hunters and bird watchers (those long-legged white birds are snowy egrets!) opportunities abound. Two hours motoring past the border is San Felipe, picturesque gulf port famed for shrimp.

Unusual sights appear long before the Mexicali border. Twenty miles from the spas, Calipatria's signboard, "Lowest Down City in the Western Hemisphere" and a 185-foot flag pole topping at exactly sea level proclaims its sub-sea level. In nearby fields, sheep graze beside whitely puffing steam wells and lab-equipped trailers housing scientists studying geothermal energy.

Across sparkling Salton Sea the Santa Rosa Mountains float as a misted Shangri-La. Along Highway 86 across the sea is Travertine Rock with its dark horizontal line, proof of a primeval lake. For other geologic wonders just fan out in any direction or wherever mirages beckon.

The best part of your travels will be returning to the relaxing pools, watching stars appear, listening for coyotes and anticipating another day of easy living in this desert water wonderland. ☐



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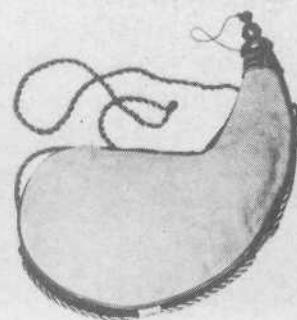
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# ADVENTURE IN JOSHUA TREE NA



**H**IS TIME of year, when there have been ample winter rains followed by warm early spring days, a visit to Southern California's major recreation park, the Joshua Tree National Monument, may include a bonus of wildflower vistas in addition to the regular attractions of bizarre rock formations, historic mining and livestock areas.

Joshua Tree is only 140 miles from downtown Los Angeles, all but the last few miles over Interstate 10, about the same distance from San Diego and a leisurely, half-hour drive from Palm Springs and the Coachella Valley resort communities.

This spring is expected to be a flower standout due to soaking rains last November and December, but a telephone call to monument headquarters at Twentynine Palms is suggested in order to find out locations precisely. The monument contains elevations ranging from about 1,000 feet in the Pinto Basin on the easterly perimeter to nearly 6,000 feet on the ridge of the Little San Bernardino Mountains. This is along the northwest boundary.

For the first-time visitor, some additional directions may be needed. On the north boundary, there are five ways into the monument. The first, from the northwest along State Highway 62, is at Yucca Valley, where a paved and graded dirt route leads to the Black Canyon Campground and Ranger Station, formerly known as Jellystone Park, a private camp. From Black Rock there are only trails into the rest of the monument.

The next road to the east reaches southward from the town of Joshua Tree, a paved two-lane route that forms part of the loop trip through the northern area of the monument and back to headquarters and the interpretive center at Twentynine Palms.

The third road is a paved-dirt road south into Indian Cove campground and hiking area, about five miles west of Twentynine Palms. Here the National Park Service maintains both a general family campground and a group-use facility, available by reservation.

*Opposite page:  
Typical Joshua Tree  
National Monument  
scenery. Photo by  
Howard Neal.*

*Right: A Spanish  
dagger blossom.  
All black and white  
photos from the  
Harry Vroman  
collection.*



Still closer to Twentynine Palms and monument headquarters is the side road leading to the 49 Palms oasis off State Highway 62, about three and one-half miles west of Twentynine Palms. No camping is permitted, although there is a nature trail here, as at Indian Cove. Palm trees abound!

The monument's principal north entrance is adjacent to the headquarters and visitors complex, a half-mile southeast of Twentynine Palms. Here, as at Black Rock Canyon and Indian Cove, there are rangers on duty, available free maps, back country hiking and camping guides and there are a number of low-cost interpretive publications, a joint project of the monument and the Joshua Tree Natural History Association.

Approaching from the south, the principal entrance is along a paved road from Interstate 10 about 25 miles east of Indio. This is the Cottonwood Springs entry, with a ranger station and campground about eight miles north of the freeway. Cottonwood Springs is the

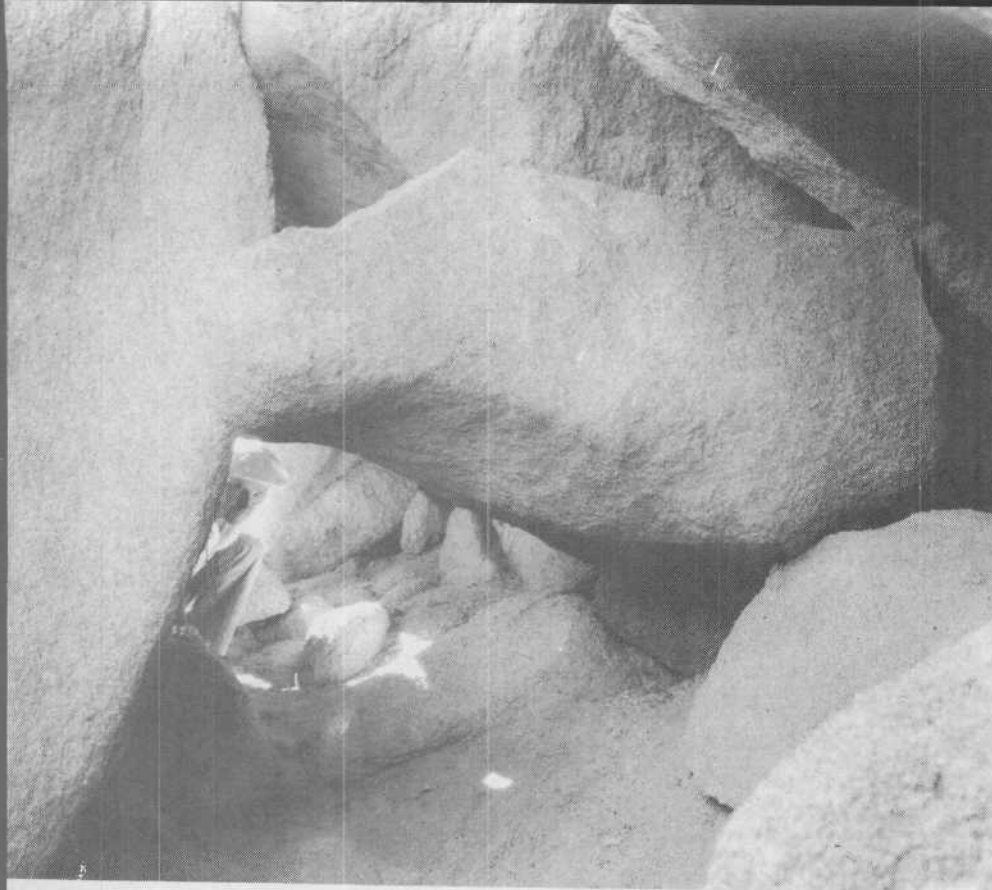
principal low-desert approach to the monument, which means flowers may appear earlier and vegetation is of the type found generally through the Colorado Desert rather than the Mojave species found in the northern area of the monument.

One additional route is available to pickups, four-wheel-drive, dune buggies or other high-center vehicles. This is through historic Berdoo Canyon off Dillon Road northeast of Indio, a 100-year-old freighting and stage route between the railroad and the old Dale and Pinto Basin mining districts.

A word of advice, however: Don't take any vehicle off-road anywhere in the monument. There are more than 100 miles of scenic dirt and paved roads available but off-road travel is prohibited. Most of the monument's 560,000 acres — except for road corridors and the principal recreational area in the center of the monument — are contained in a series of wilderness sections where only foot traffic is per-

# TIONAL MONUMENT

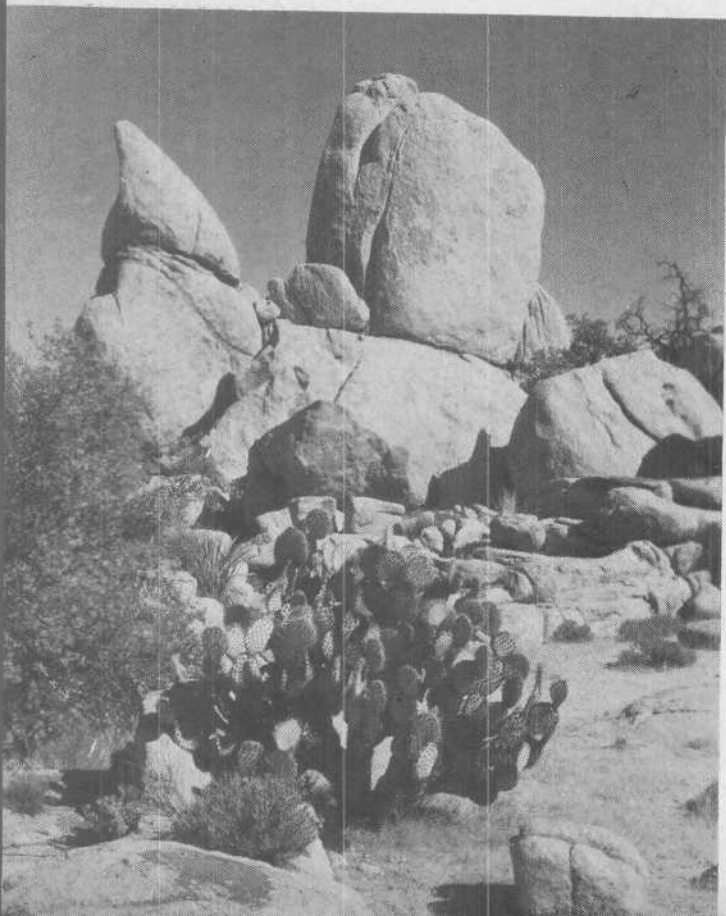
by BILL JENNINGS



mitted. Again, it's advisable to check with a patrolling ranger, or at campgrounds and monument headquarters to be certain which areas, and old roads, are available for use.

Over the years, Joshua Tree, contrary to most such federal or state park

areas, has decreased in size. Originally, when established by President Franklin D. Roosevelt in 1936, the monument contained 825,340 acres, but was reduced to the present 557,000-acre plus status about five years later due to pressure from mining groups.



*Above: Photographer Vroman at the entrance to Hidden Valley. Left: Inside Hidden Valley, a golden thorn cactus and a rocky wonderland.*

The prime mover in establishing Joshua Tree was the late Minerva Hoyt of South Pasadena, who formed the International Desert Conservation League. Her goal was to stop or greatly reduce the widespread practice of stripping the desert of its cactus and other distinctive plants which were widely used in landscaping. Despite formation of the monument and other protected enclaves, the stripping has continued until recent state and federal controls have put some teeth into enforcement policies.

Establishment of the wilderness sections followed enactment of the U.S. Wilderness Act in 1974 and subsequent National Park Service restrictions in 1976. Wilderness areas are still accessible to the public, but on foot or horseback only and existing roads, some of them more than 100 years old, were allowed to return to the desert.

The major exceptions are the old trail through Berdoo Canyon, Old Dale Road from Cottonwood Springs northeasterly and the Covington Flats cattle and mining trail from the Yucca Valley-Joshua Tree area. All of these roads are passable, with great care, by conventional vehicles but travel is advisable by four-wheel, pickup or dune buggy users primarily.

Berdoo Canyon road is posted at its southwest end as a four-wheel-drive route and often is just that, but in November of last year the Riverside County Road Department graded and widened the road from the end of the paving at old Berdoo Camp on the old Colorado River Aqueduct up to the monument boundary at the 4,200-foot summit of the Little San Bernardino Mountains, seven miles south of the Squaw Tank picnic area.

Squaw Tank, which gets its name from an old cattle water reservoir built there nearly a century ago, is the center of interesting cattle and mining sites now connected by a loop road with numbered scenic points and a special brochure.

Berdoo Camp was the Metropolitan Water District's engineering and construction headquarters for the lengthy Cottonwood, Mecca and Coachella tunnels in the 1930s. Many of the old dormitory, shop and medical buildings there found their way to Coachella Valley ranches and cities and a few still exist. The paved road from Dillon Road ends at the campsite in the lower canyon.



*The Palace Rocks  
in Joshua Tree  
National Monument.*

The monument's major campground is north of Squaw Tank along the main paved loop road that connects the Twentynine Palms and Joshua Tree entry points. Jumbo Rocks contains more than 130 sites. Sheep Pass Group camp, Ryan Mountain and, to the northwest, Black Rock Canyon, and north of the monument's principal recreation areas, Indian Cover, are some of the others.

Cottonwood Spring campgrounds contains more than 60 family campsites, near the south ranger station and visitors center.

Largely due to its location in the transitional area between the low or Colorado Desert and the high Mojave Desert, the monument contains relatively few *Washingtonia* palm oases. Largest of these is 49 Palms near Twentynine Palms, followed in size by the Oasis of Mara or 29 Palms. The most secluded group is at Hidden Palms oasis, reached via a four-mile trip southeasterly from Cottonwood Springs campground.

Mining history in the Joshua Tree country dates to the Civil War, with sporadic prospecting until late in the 19th Century when serious mining began. The first organized activity was in the old Palms Mining District, as the small placers around the Oasis of Mara became known. From 1873, about 20 active claims were reported in the first 10 years.

The first sites were within a 10-mile radius of the marshy springs but soon prospectors began moving further into the hills to the south and east. This led to the development of the authentic mining boom in the monument region, from about 1884 well into the first decade of the 20th Century, but at several different locations.

The first and among the best known of these was the group of claims known as the Virginia Dale, filed in 1885. The group took its name from a new town named for the western heroine, located about 15 miles east of Twentynine Palms oasis on what became known as Dale Dry Lake. Well water provided sluicing service for the placer diggings six miles south in the hills.

This was the first of the Dale town-sites and began to fade within 10 years of its founding. Activity moved south, fol-



lowing the prospectors, to the town of New Dale, some 15 miles to the southwest in the Pinto Mountains. These areas are outside the monument but just barely. Much of the prospecting took place inside, primarily in the rocky outcroppings to the north and west of Pleasant Valley, where Squaw Tank is located.

Additional prospecting, and some actual mining occurred in the Hexie and Eagle Mountains, to the east, and the major mining development still active in Riverside County, the Kaiser Steel Corporation's Eagle Mountain Mine, stemmed from these early searches and sporadic developments.

Kaiser's claims, improved early in World War II, began as gold prospects during the Dale rush.

Perhaps the most famous mines were the Lost Horse and the Desert Queen, the latter identified in later years with the legendary Bill Keys, rancher, hard rock miner, homesteader and authentic desert character. Keys' old ranch, also named the Desert Queen, has been preserved as a landmark of the region's ranching and mining history. Keys died in 1969, ending a many years' battle with the park service over restoration of mining and ranching in the monument boundaries. He had spent most of his 89 years in the desert, from Death Valley southward to Joshua Tree and became perhaps better known than either of the national monuments. The only early-day mining figure of greater fame, perhaps,

was Walter Scott — Death Valley Scotty. He and Keys were partners in the early days.

Keys' old ranch, the Desert Queen, is located on a side road just north of the Squaw Tank junction with the main monument highway.

Inevitably, there are comparisons among the two huge desert national monument, Death Valley and Joshua Tree, and the largest desert state park in the world, Anza-Borrego.

All were established in the mid-1930s; all contain both mining and ranching historical sites; all are noted for populations of desert bighorn sheep and bizarre geologic formations. However, Death Valley is bigger than the other two combined and reaches its highest elevation (Telescope Peak, 11,049 feet) nearly twice as high as either Joshua Tree or Anza-Borrego.

One thing for sure, this spring hopefully, all are noted for extravagant wildflower displays, with many of the same blooms, and the sequence of blossoming can take a flower fan from early February, in Anza-Borrego, through late May, in the uplands of Death Valley.

But for this month, concentrate on Joshua Tree, one of the most spectacular as well as most accessible of all Southern California desert garden spots. It's only a three-hour run from any metropolitan area of the south coast, and with gasoline availability and prices the way they are, that's a decided sales point. □

Facing the challenge of Baja's ruggedness requires a little pre-planning and preparation. This is the first of two-parts describing how the author put together his . . .

# WHEELS FOR BAJA

*Three extra sets of road lights help spot livestock wandering about on Baja's unfenced grazing lands.*



by DON MacDONALD

Photos by Gary Squier

**W**HANKIND IS EXPLODING with his 0000 suburbs and suburbs of suburbs. Our space, our desert, is shrinking and that which the speculators haven't blocked out, the Bureau of Land Management has posted. And so your thoughts turn to Baja, the last temperate land mass on this continent where you can explore without trespassing and if you so wish, go days without seeing another *gringo*. But you'll need specialized transportation and that's what this is about.

Baja is no place for walking. By that I



Originally designed for use by the Japanese forestry service, the 116.1-inch wheelbase Toyota Landcruiser FJ-45 is an ideal vehicle for long-range cruising on bad roads.



mean having to walk out. You'll need transportation that'll get you where you want to go and get you back again, at least until the day when you decide, like some Americans have, to try staying down there. And it's true that the Mexican authorities are paving their roads, more miles each year at an amazingly fast rate, like finishing Highway No. 1 for 1059 miles from Tijuana to Cabo San Lucas in less than 12 months once they put their backs to the job. But the Auto Club (of Southern California) map, which is the most accurate of the many in print, tells you right on its back cover that "... unpaved roads on the Peninsula are usually rough, with sandy or rocky stretches and steep inclines, making a sturdy vehicle essential. Standard passenger cars are not suitable for most of the unpaved roads."

The roads they're talking about lead to the most interesting places, the remote

*bahias* and *puntas* or even, still, to Scammon's Lagoon where the grey whales mate each February and March. If you want to really see Baja, a "sturdy vehicle" is indeed essential. In fact, it has to be much more than just sturdy and reliable. You'll need traction on all four wheels most of the time. You'll need torque to crawl up those "steep inclines" because if you charge them, you're likely to bounce right off into the mesquite if you're lucky or into thin air if you're not. You'll need self-containment of a different kind, the survival kind, because water's even scarcer than gasoline and food's the scarcest of all where you'll be. And you'll need a bed to stretch out in which is elevated and covered to protect you from insects and snakes and such which don't see enough humans to lose their curiosity.

You can't buy this kind of vehicle from Cal Worthington or that other fellow on

TV who calls himself the King of RV Dealers. Cal might have what would best be called a starter kit; the King's stuff wouldn't get a mile south of Puertocitos. You have to search around for a few models of a few brands which offer the basics upon which you can build and you might as well buy one that's used because they cost less. The money saved will be needed for some judicious modifying and rebuilding which I'll get to in a bit.

You see, what you'll be needing is not an off-road vehicle but a *bad-road* vehicle. There are some important differences between these two. The off-road vehicle is perhaps typified by those fat, shiny Blazers, Ramchargers and Broncos and the similar pickup trucks from which they're derived. True, they have four-wheel-drive and special tires and some owners risk the stylish sheetmetal charging up and down dunes and through



*Sears' Adventurer series tires with normal tread pattern have proved a match for all terrain encountered so far and combine traction with a smooth, quiet ride.*

mudholes on weekends but these enthusiasts aren't really going anywhere. To coin a couple of terms one time to clarify my meaning, "off-roading" is a sport whereas "bad-roading" is simply coping with any and all conditions that may occur between where you start and where you want to go. Your priority is to save your equipment, not to see how much punishment it will take or how fast it will go.

Mechanically there's nothing to hinder a Blazer or the others mentioned from taking on any terrain you're likely to encounter in Baja or most anywhere else. Their problem is bulk, mainly excessive width and to the extent that you'll surely want to conserve fuel, excessive weight. There are places where the trail is hacked out of a ledge on a rocky cliff and the difference between squeezing through or hanging a wheel over the side may lay in the difference between the 78.5-inch width of the Blazer and the relatively skinny 59.9 inches of, say, a CJ-5 Jeep. Or it could be the difference in their widest tracks which are 66.7 and 53.8 inches, respectively. Then with the same sheer drop on the passenger side, wouldn't you rather negotiate a hairpin with the Jeep's 2.31-foot shorter turning circle? Granted, this trail clinging to the side of a cliff may be the exception but having to slither between two giant boulders is not and steel-tough manzanita branches

overhanging the road are downright common. In other words, why lay yourself open to not getting through at the worst or ripping up some expensive sheetmetal at the least. The first possibility is labeled "worst" because most often in that situation, there's no place to turn around and if you thought going in was bad, try backing out!

Look for another feature, too, which is peculiar to the functionally designed 4WD vehicles such as the Jeep or Toyota Land Cruiser and that is a low hoodline. There is perhaps nothing more disconcerting, or even dangerous, than to crest a rise at any speed and see nothing ahead but the horizon. The broad, high hood contours of Blazers and their ilk block out visual contact with everything but vast expanses of sky at these moments. For all you know, the trail may have ended at that point or the last storm may have washed a ton of debris directly in your path. So, think low, thin, light and functional when you're choosing your Baja cruiser.

These considerations pretty much restrict you to the two variations of the CJ Series Jeeps or the Toyota Land Cruiser if you want to buy a new vehicle or, if you go the used route as I suggested, those plus the Datsun (Nissan) Patrol and the English Land Rover which are no longer actively exported to this country. Possible compromise candidates are any International Scout, particularly the latest

Scout III on the longer of the two wheelbases, and 4WD domestic pickups with six- to eight-foot beds that were built prior to the time when Detroit decided to high-style its light truck offerings. Then, if you're lucky, you can find something like the vehicle pictured on these pages which is a very rare FJ-45 Toyota Land Cruiser, a long-wheelbase pickup variation of which only 2782 were sold here between the years 1962 and 1967. An equally lucky and rare find would be what is known as the Land Rover 108, the numbers standing for a wheelbase that is 20 inches longer than the more familiar Land Rover 88. Nor should I forget the more numerous wheelbase Toyota Land Cruisers with four-door wagon bodies which could be modified for our purpose.

My pre-occupation with the proper combination of wheelbase and overall length has to do with the type of self-containment I feel is needed to cruise primitive areas in reasonable comfort. The CJ-5 and CJ-7 Jeeps, the regular Toyota Land Cruiser and the Land Rover, and the Datsun Patrol are too short for one much less two adults to sleep comfortably in the back. So too, for that matter, are Blazers, Broncos and Ramchargers. The long-wheelbase Toyota pictured, its four-door wagon counterpart on the same chassis, the Land Rover 108 and the latest Scout Travelall, all with rear seating removed, will accommodate two people up to six feet tall with a few inches to spare, as will any eight-foot pickup bed. The six-foot versions of the latter are strictly for shorter folks.

Why not a Jeep with a light camping trailer, the type that folds out to make a tent, you ask? The answer is that towing anything under the conditions you'll encounter in Baja will severely restrict your mobility. If you don't break the hitch, you'll hang up on it when you try to negotiate your way in and out of a narrow wash. And I don't know of any production trailers that are sprung or constructed sturdily enough to take the beating. I could imagine several other problems but hitch clearance is the main one. An ex-military utility trailer on a pintle hook, maybe, but not anything attached to a conventional Class III, frame-mounted hitch. However, if you want to fool with portable tents and camping cots, then the wheelbase of



your vehicle won't matter so much.

Before leaving the subjects of wheelbase and self-containment, I should mention the true utility wagon such as the 4WD Chevrolet Suburban, older International Travelalls and the Jeep Wagoneer. First of all, these are wide, the Chevy for example using front-end sheetmetal identical to that on the Blazer. Then, unless you install lifter kits and monster tires, your road-clearance problems will occur in the middle where you're liable to wipe out your transmission, rear prop shaft and/or exhaust system going in or out of the same narrow wash, or, when topping a sharp rise. To prevent this, you must get into the big tires which require so much torque to rotate under certain conditions that all semblance of economy is lost. These types of vehicles are okay but you'll have to live with a high-cube V-8 that may deliver 10 miles per gallon on the highway and considerably less off of it. And as a footnote here, don't let anyone tell you that those big tires and lift kits enhance ride and handling. Any tire much over a 12x15 LT (or 10x16.5) is expensive, hard to balance and harder to steer.

Now, with the make and type vehicle chosen, your next major decision will involve the ideal powertrain. Here starts my argument that a used vehicle makes sense because the money you'll save will more than buy you the factory-rebuilt engine and transmission of your choice, installed by an expert. Adaptor kits are available to stuff General Motors, Ford or Chrysler engines and the same makers' automatic or manual transmissions, mixed any way you choose, into almost any 4WD vehicle. For my Land Cruiser, I chose a new (1978) 350-cubic-inch Chevy V-8 and mated it to the existing three-speed Toyota manual transmission. There were reasons for keeping the old transmission which I'll explain later, but my total cost for the transplant, including details such as hooking up the instruments and repressurizing the radiator, came to slightly under \$2000. When you figure the \$1250 I paid for the bare, used vehicle about four years ago, plus the considerable mileage I accumulated on the original engine while I had the rest of the equipment you see in the pictures installed, piece by piece, my outlay for an utterly reliable, thoroughly modernized workhorse was considerably less than the \$7000 and up



*All-aluminum shell [above] was custom-made to fit odd-sized metric bed by Travel Time, Inc., of Springville, Utah. The white cans are for water and the "back-up" lights came from a tractor supply house. Spare gas and propane [below] are carried on the curb side for safety reasons. Shock absorbers [above gas filler] cushion twist between the body and cab.*



prices being asked for new 4WDs today. But you may also now understand what I mean when I use the term "starter kit" for a factory-stock vehicle, new or used.

Whether you install a replacement engine or buy a vehicle already equipped with a suitable powertrain, my suggestion is to pick a V-8 with a displacement of between 300 and 350 cubic

inches, give or take 20. This range will produce the horsepower you'll need and if the engine is of the truck type (all original 4WD equipment is), you'll have a reasonably flat torque curve. In other words, it is less likely to "stall out" at lower engine speeds under load, which can become a problem when you install

Continued on Page 46

# Winter Vacations Are Fun!

by ERNIE COWAN

**F**OR YEARS I've been a fair-weather vacationer. Blue skies and dry roads are what I wanted for an enjoyable trip. But a few years ago I spent a winter week in Death Valley, four-wheeling through the snow-covered Panamints, lunching in Skidoo in the

snow and dropping into the valley through ice and mud.

And last winter it was a mid-March trip to Yosemite to enjoy the valley carpeted with snow instead of tourists.

It's been a great discovery — one that most of you four-wheelers can also

enjoy. Visiting our National Parks in winter can open a whole new world of peace and beauty to the vacationer.

While some park services are closed or limited during the slower winter months, a little advance planning can eliminate that problem. And, the seasonal beauty of fall color, ice, and snow, combined with only a handful of visitors, is delightful.

Yosemite is now on our regular winter list, along with trips into the High Sierras and Death Valley. We enjoy mini-vacations when we visit these places, taking one or two week days off and combining them with a weekend for our winter visits.

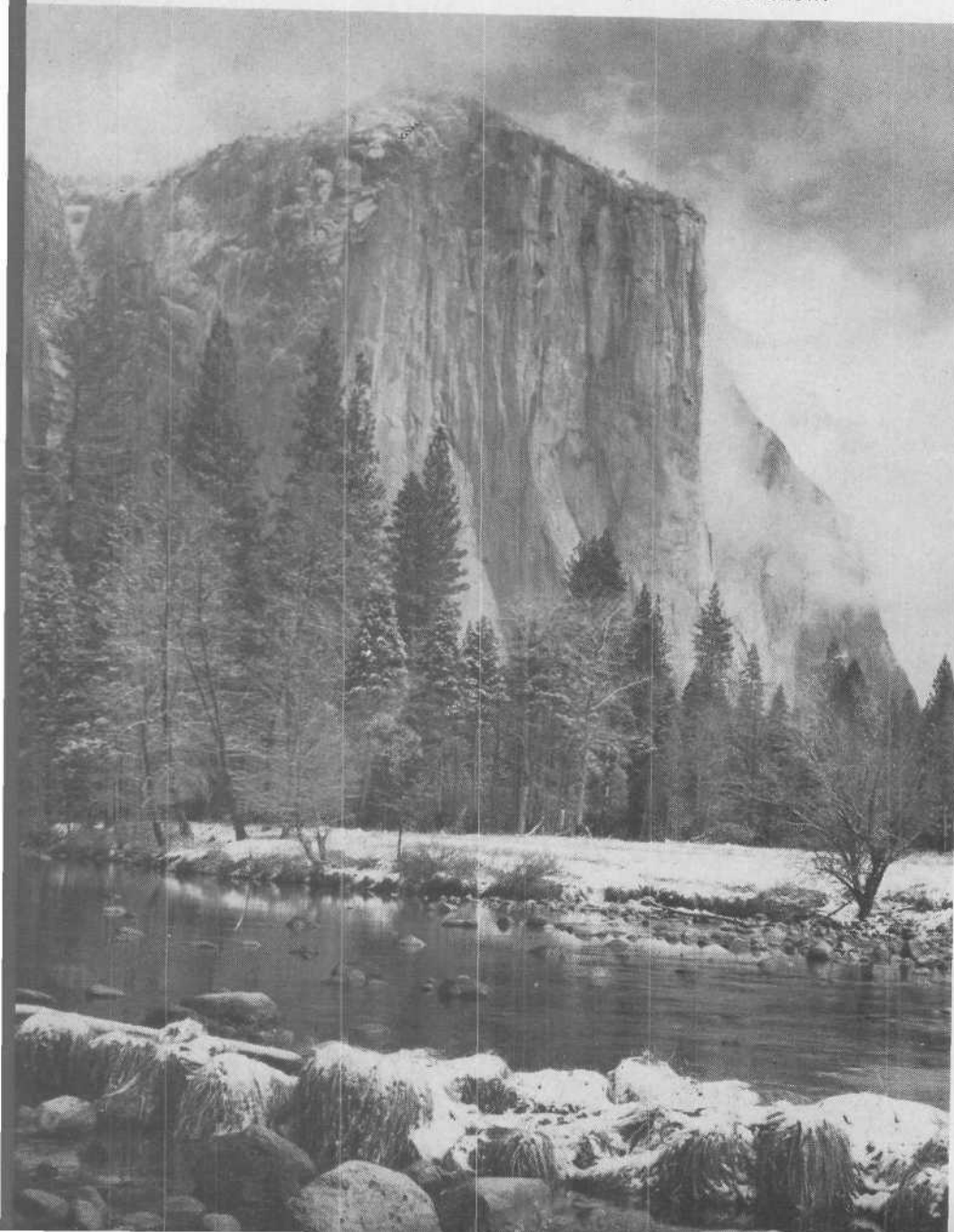
But our most recent early winter adventure was into southern Utah to visit three of the most popular national attractions, Zion and Bryce Canyon National Parks, and Cedar Breaks National Monument. We had visited these beautiful areas in the summer as most people do, but the thought of seeing the winter side of southern Utah seemed like an exciting prospect.

While we do go equipped for the worst weather on our winter journeys, we don't try to "rough" it camping out. We have tried this a few times, but it can be rough on a family with kids, especially if the weather turns really bad. I remember one late November visit into the High Sierras that we made in our tent trailer. It was an enjoyable trip until it began to snow . . . and snow . . . and snow. Then we tried a small travel trailer. It was a better "home" than the tent trailer, but confining in a snow storm for a family of four.

Many parks offer lodging at reasonable winter rates within their boundar-

*Awesome Cedar Breaks  
National Monument in the  
cool clear winter air.*

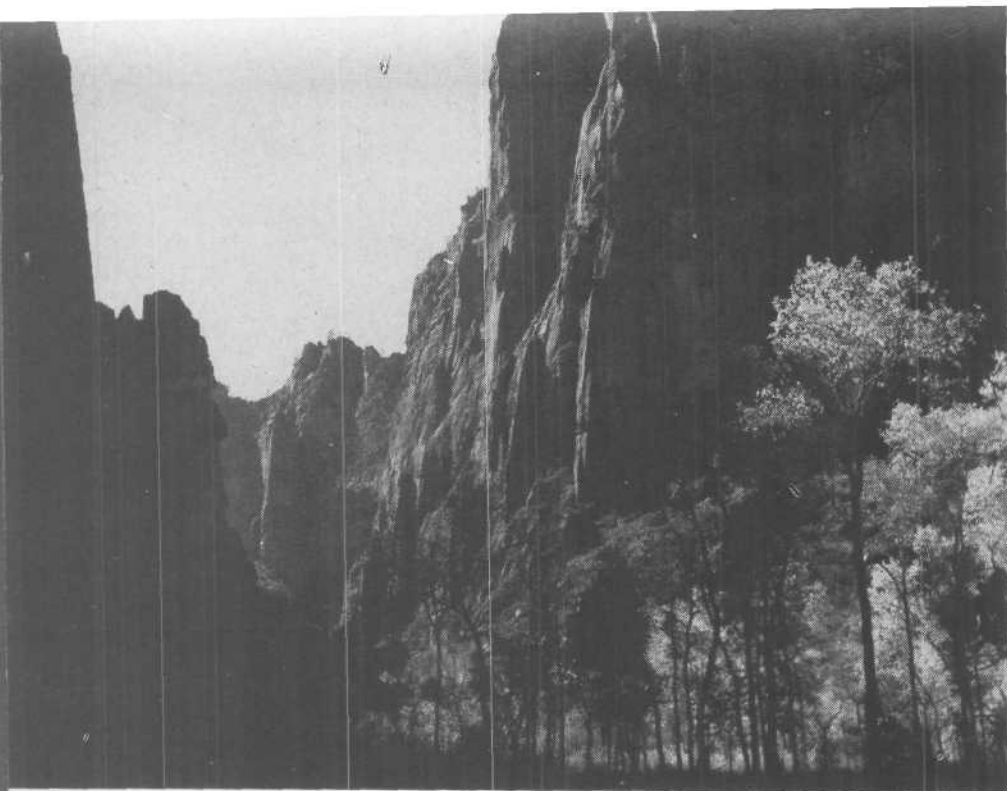
*El Capitan, stone sentinel in Yosemite, amid winter snow.*











*Zion Canyon [above] with its late fall finery. Four-wheeling in snow [below] in Utah.*

ies. Other lodging can always be found near most National Park areas.

In Yosemite, for instance, small cabins that accommodate four can be rented for about \$17.00 a night. These are sleeping cabins only, but well heated and comfortable. A cafeteria, two restaurants, and a huge lounge-game room are within a three minute walk even in deep snow. More elaborate, and more expensive, hotel accommodations are also available.

On our visit to Utah we stayed at a friend's condominium at the beautiful

Brianhead ski resort area, just three miles south of Cedar Breaks National Monument. From here we could explore a different area of this beautiful high country each day and return at night to a warm fire and hot meals.

While a visit to one of the National Parks in the warm summer months is nice, there is no comparison to an "off season" visit.

The first thing you notice is the lack of other visitors. At Bryce Canyon in November we shared this colorful garden of erosion with no more than a dozen

others. In the woods back from the canyon rim, I stood quietly as a dozen deer wandered by, feeding on grass now tinted gold by the chills of fall.

And in Yosemite last winter I watched a frolicking pack of coyotes rummaging for breakfast in a snow-blanketed meadow just yards from the village.

And perhaps my most vivid memory — as I sat in the little Yosemite Chapel to witness the marriage of my friend and his new bride, a gentle snow began to fall outside. There were only five of us in the church. It was warm, quiet and still, and the world was at peace. It was beautiful. After the ceremony, the newlyweds disappeared across the meadow as they walked back to their cabin in the gentle snowfall.

While at Zion, there were just a few others to enjoy the riot of color created by the cottonwoods dancing in the breeze and costumed in the brightest yellows of fall.

During our stay in Utah, we also took advantage of many of the back country routes, most untraveled since the last snowfall. On one of these trips we were four-wheeling through foot-deep snow near Summit Mountain when we came upon a small beaver pond frozen over for the winter.

Here, amid winter-naked aspen we enjoyed a trail lunch and "ice skating" on the frozen surface. There was something about the winter solitude at the pond that made it a place very special to us. The powdery snow made walking a noiseless task. And the stands of leafless aspen stood sentinel over this wilderness place with stark formality. At one end of the pond was the huge pile of branches, twigs and sticks that marks the home of Mr. Beaver and his family.

In summer months this pond would also be a place of beauty, but our winter visit allowed us a view seldom seen but to be long remembered.

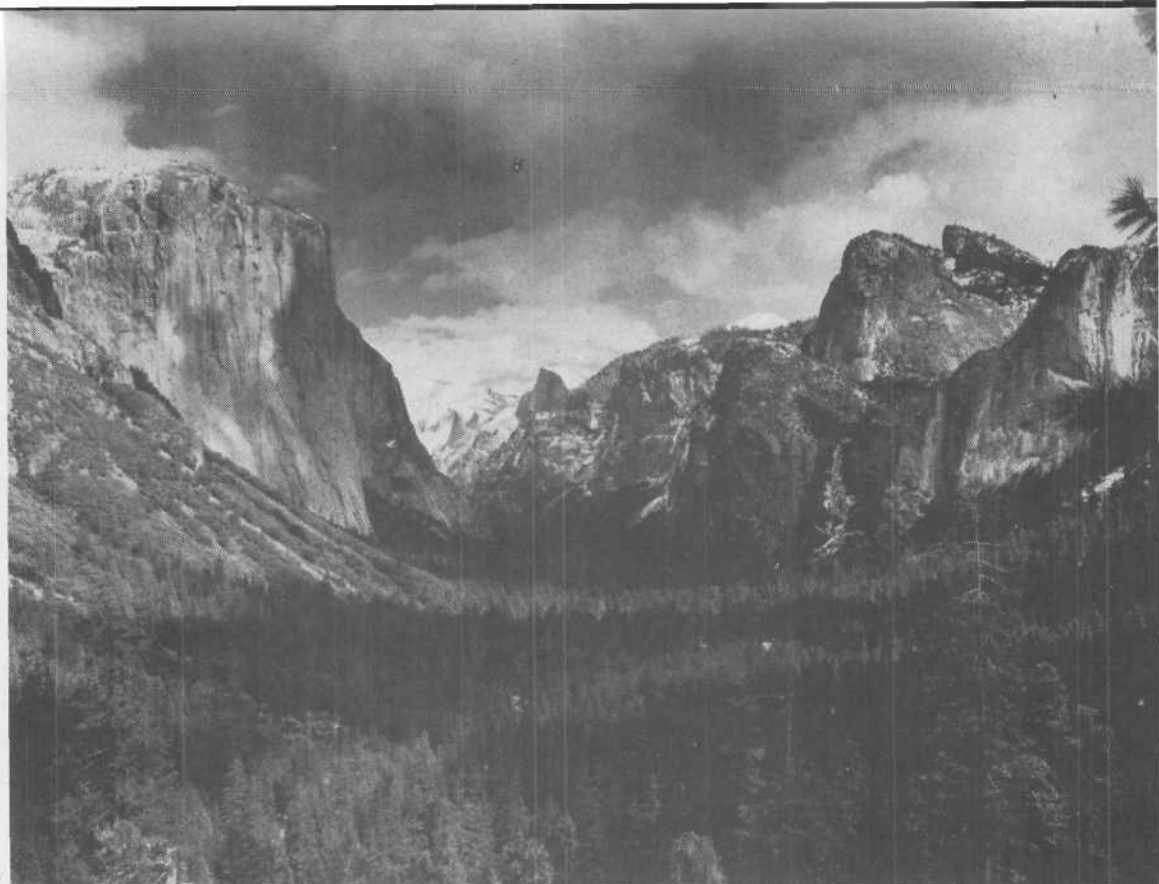
This region of southwest Utah offers the winter visitor a variety of areas to explore. During some of the more severe storms, some of the routes like State Highway 14 between Cedar City and U.S. 89 might be closed because of deep snow. But most major routes are kept open to through traffic.

One of the best "exploring" maps we found for the area is map number five published by the Utah Travel Council. This is a multipurpose map covering in





*Yosemite overview  
[right] during  
early winter snow  
storm. Bryce Canyon  
trail [below] is all  
but abandoned during  
the "off" season.*



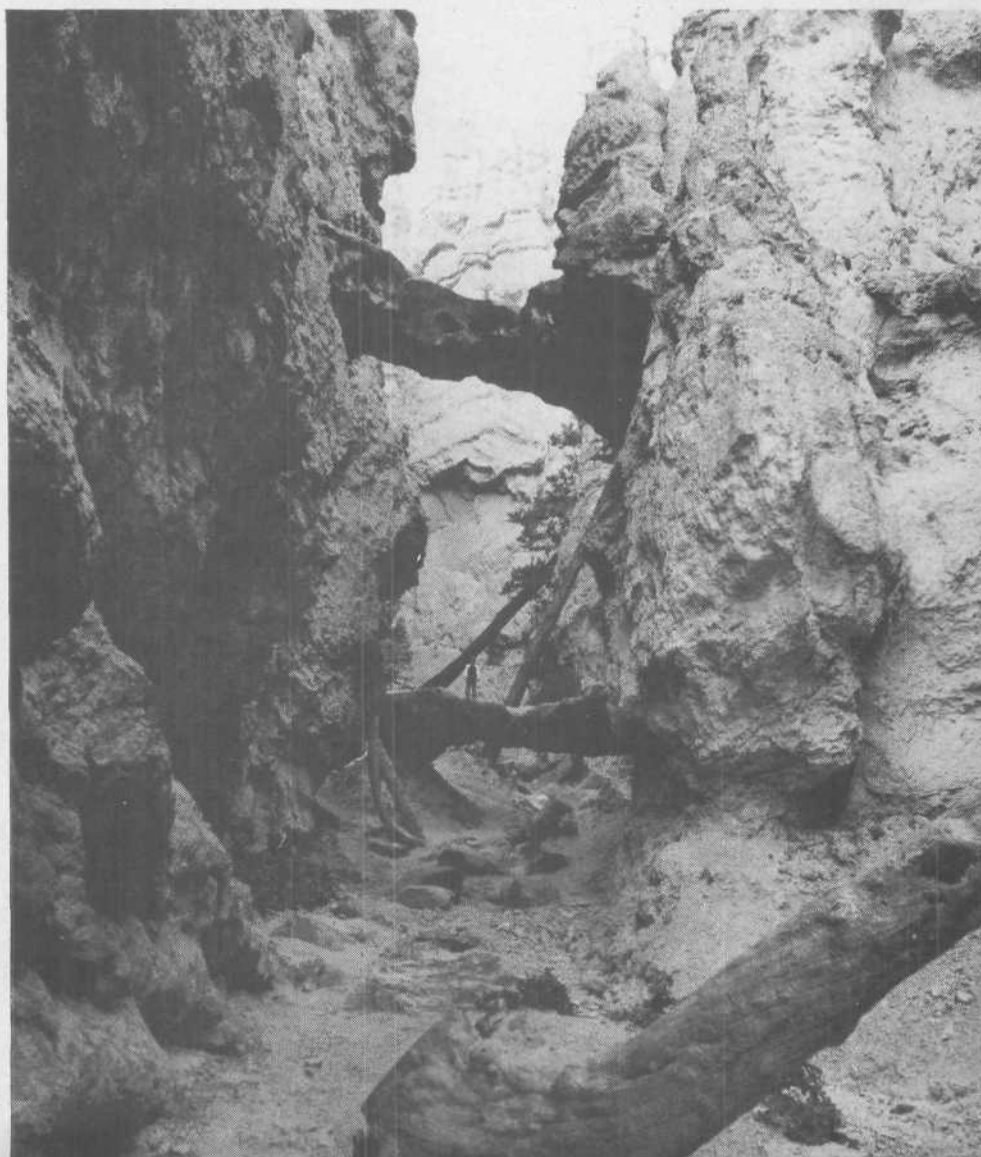
detail the roads, highways, forest and Jeep roads, trails, recreational, geologic and historic points of interest. Topography is also indicated as well as land ownership. We found it to be a dandy map for planning our daily schedules of exploration. A total of eight such maps covering the entire state are also published by the Travel Council. The only problem with these maps is that they show you more than you have time to see in a short visit.

Our checklist of winter visits for the future now includes the Grand Canyon, Yellowstone, Monument Valley, Crater Lake and Mt. Lassen.

As I finish writing this article, I have just hung up the telephone after making reservations for four days in March in Yosemite. Last year a similar stay brought to us two days of soft snow followed by bright sun. Such a combination made for excellent photography and the snow storm was so mild that even hiking in it was a pleasant adventure.

Once you discover the fun and adventure of winter vacations, you'll look forward to this special kind of trip. More planning and effort goes into our winter trips, but it brings us closer together as a family.

Maybe you'll be one of those few people we meet during our winter visits to our National Parks. □



# Elk Enterprise

by K. L. BOYNTON

© 1979

**N**OT BY nature a desert animal, the mighty antlered elk has begun to appear in arid regions where he has never been seen before.

For the first time in recorded history, for instance, bands of elk now live the year round in the dry, treeless interior of Washington, a wild and desolate land of sagebrush and bluebunch wheat grass, of jackrabbits and kangaroo rats so typical of the vast stretches of the arid Great Basin. Their presence in such an inhospitable terrain is causing savants to wonder how these big horse-size members of the deer family are going to handle the tough problems posed by this harsh new environment.

To be sure elk are highly adaptable animals.

They have had to be. Time was when they ranged across the face of America from southern Canada to the northern counties of the Gulf states. They were in every state except Maine, Delaware, Mississippi, Florida and Louisiana, and were common in New Mexico and Arizona. Slaughtered by the thousands, pushed out of their native habitats by the ever-encroaching white man over the years, the elk have had to retreat further and further up into the high western mountains.

But they are not mountain animals, not adapted to year around high altitude living. Warm-coated as they are, they cannot stand intense cold. Heavy-bodied, small-hoofed, they sink into deep snow to flounder helplessly at the mercy of coyote, wolf, bear and cougar predators. They starve when deep drifting snow covers the grasses and shrubs. To survive, they must leave the high mountains before winter.

Hence a pattern of behavior has become gradually established whereby in the late fall, the elk come down to the lower ranges and plains where the snow is lighter and food available. In the spring they retreat again to the high mountains. This double wandering migration is what has kept the elk in business so far; yet their appearance in the winter foraging ground meets increasing resistance each year as cattle raising and agriculture becomes more widespread. This is very bad news for the elk, for as everybody knows, animals competing with man are bound losers.

Left to their own devices, elk have historically selected places to live that had

open areas for grazing with a forest edge adjacent for protection. Large and bulky, they still move quickly among the trees. Even the big bull elk, with his spreading antlers that rise slantingly some 48 inches above his head, can negotiate thickets with surprising ease. The woods provide welcome shade in summer and most important, there newborn young can be safely hidden, their coat pattern lost in the dappled sunshine. Such is the ideal elk habitat.

But what now of this new arid terrain they have begun to move into?

The sparse and scattered clumps of low stocky sagebrush that spot such wide stretches of bare hot ground would seem a poor substitute for a tall and friendly forest. Nor could the food supply ever be as varied and plentiful. Yet to a knowing animal, good forage is to be had in the native shrubs and desert grasses, and drinking water in small hidden springs if they can be found. Desert land, thus far of less interest to man, may be the one last habitat where native elk can make it on their own—if they can adapt.

Perhaps their biggest plus is that they



*Rocky  
Mountain elk  
or wapiti.*

*Photo  
courtesy  
San Diego  
Zoological  
Society.*



are not fussy about food. Zoologist G. H. Gates, in his New Mexico study, found that when available some 85 percent of their food is grass. They also munch on a great variety of bushes and leaves, twigs and branches of trees, including conifers of various kinds. The main thing they need is volume, for it takes a lot of groceries to keep a big 700-1000 pound gent elk going.

The animal eats as he moves along, always with an ear flicking for suspicious sounds, stopping now and then to raise his head and look around. Plant material, manipulated in his thick lips and twisted by his tongue, is held firmly to be torn off between his lower front teeth and a horny pad in his upper jaw. His battery of cheek teeth, with their crescent-shaped ridges of hard enamel, makes sharp and abrasive grinding surfaces where each mouthful is cut and smashed before being swallowed.

Elk are cud chewers, and as such the lucky possessors of the ruminant four-part "stomach" the first of which, a big sack, serves as a temporary storage bin. The elk can thus feed quickly and, as he



*A quartet of elk is contentedly chewing the tall, lush grass during a midday rest. The antlers are in the soft velvet stage. In a few more weeks these bull elk will separate and battle one another for mastery of the cow elk herds. Photo courtesy National Park Service.*

goes along stuffing the sack, the food inside is churned up. Fermentation starts and portions pass into the second chamber where they begin to form small wads.

The storage bin once fairly full, the elk finds a hidden spot and, lying down, takes his time with the rest of his dinner. Cud chewing is now in order. This consists of bringing up small wads into his mouth, a trick made possible by sack action and volunatry muscles that line the walls of his esophagus. The elk chews away, his long jaw swinging slowly from side to side and each mouthful, mixed with copious mouth juices, is ground finer and finer. Swallowed, it eventually lands in the third chamber for special attention then passes into the fourth, the true stomach where real digestion takes place.

This stuff-yourself-fast, chew-it-up-later system is an age-old adaptation of certain herd animals who, when foraging in the open, are in constant danger from stalking predators. Such expeditious dining methods should prove extremely helpful to elk now moving into treeless arid lands where, standing, the elk sticks out like a sore thumb; lying down amid squat sagebrush is hard to see.

Elk are herd animals with inherited "togetherness" behavior which should be another great help in adapting to a treeless terrain. More ears listening and more eyes watching mean greater safety

for each individual, increasing the chances for the entire herd. As to be expected elk have their own special brand of herd togetherness, biologists Seton, Murie, Van Wormer, Calahane and other learned observers of elk behavior reporting that it goes like this:

Along about mid-September the rutting season opens. Then it is that the big bulls, resplendent in their crowns of spreading antlers and on fire with enthusiasm for the reproductive work at hand, set about rounding up candidates for their harems. It isn't easy, for the ladies, having roamed freely with their young all summer, resent being suddenly marshalled about. A reluctant cow of some 500-600 pounds, hard to budge one minute and off with a kick of the hind leg the next, is a problem to corral, to say nothing of the added complications of silly calves frolicking all over the place. Handling some seven to fifteen of these ladies takes some doing but the bull, snorting and impatient, and prodding vigorously with his sharp-tined antlers, finally brings them into line.

The ladies at last settled into a tight grazing group, the lord sultan of the harem-to-be stretches out his great swollen neck and raising his muzzle high, sounds off in a full lung challenge, daring all other males within earshot to come and try to take them. His is a wild and exultant voice, beginning on a low note deep in the chest, sliding upward to



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a high clear bugle, and ending in a series of power-packed grunts.

At this point, he should be able to direct his attention to harem matters at hand. But alas.

Another bull elk, nose to the wind, appears just in time to get the full blast of the bugle. Now while he has been giving the cows the eager eye, he may take a second look at the lord of the spread and conclude he better collect a harem of his own. But, on the other hand, maybe he's big and tough himself and a batch of recalcitrant cows already rounded up is certainly a great time and energy saver. So he bugles back the elk equivalent of "nuts to you."

Now it's up to the Sultan. He may take another look at his harem and decide he can do a lot better than that; so, moving off with increasing speed, he leaves the girls behind. More likely, he tosses his head, snorts and, antlers lowered, advances towards his rival. The challenger, out for the ladies now, head forward, antlers ready, comes to meet him.

And then, all hades breaks loose.

A fight between two big bull elks is an earth shaker. The rivals rush together. Antlers meet with a crash of bone on bone. Snorting with rage, the fighters rear, striking with their front hooves, great bodies thrashing. Another clash of antlers, and a great shoving to and fro. A sharp tine slips past the defense jabbing home. One bull goes down and that's that. The vanquished moves off, the winner bugling his triumph.

Which won? The cows grazing nearby don't bother to look up.

There are other challengers, and in between bouts, the cows must be kept from straying and what with reproductive duties, the bull elks have little time to eat and less to rest, so when the season ends in mid-December they are ready to call it quits.

The herd members come together and move into the winter foraging grounds. Here they feed in mutual protection until the following spring. Now the second phase of their togetherness begins. The pregnant cows, the youngsters of the previous years, and the teenagers trudge off to the lower mountains. The bulls shove on further up by themselves.

The two spend the summer in quite different ways.

The cow group breaks up into smaller bands. Each is a separate entity, its

members grazing and resting together. Family raising is obviously on the program, with blessed eventing taking place in May and early June. A cow about to give birth goes off alone but stays in vocal contact with her band whose members are always nearby in case of predator trouble. One offspring is the usual score. The calf remains hidden, the mother rejoining the band after a day or two, but returning to nurse the youngster. And here it must be said that for minding mama a fresh-out little elk calf deserves a big gold star. At her signal he flattens out head on the ground and stays absolutely motionless—even if a fly lands and makes a tickling tour of his nose. This instant obedience, long a factor in tribal survival, will become even more important in a new arid habitat with so few hiding places.

When the calf is strong enough to run rapidly and follows well, the cow leads her offspring back to the band. Now is the time for lesson learning, biologist M. Altman's fine study showing that the cows in playing splash and frolic in water with their youngsters, for instance, are preparing them for stream crossing that must be done in the coming fall migration. It is a time, too, for learning to watch others for silent signals—a high-step warning gait, and the excited raising of hairs of the rump patch—and how to make the signals themselves. The calves must do their part, for what champion is around to protect them? Not their papas, who are far, far away.

Emergency band defense is handled with dispatch by the cows themselves. A squall of distress from a calf brings the nearest cow rushing to its assistance at once. A lurking predator gets the bum's rush from the ladies in concert, while the yearling females quickly lead the little calves to cover. Band cooperation grows and in time the close bond between the cow and her calf weakens. Weaning then comes as less of a shock as group herd attraction and attachment increases.

And what have the mighty ex-sultans been doing all this while?

Growing brand new antlers.

About the end of December all that gorgeous head hardware that decorates the masculine pate has weakened at the base and fallen off. All that is left is a bony platform that sticks up about an inch above the elk's forehead. Raw and bleeding at first, the wound is soon



covered with hairy skin. New antler growth, hormone stimulated, starts in April or May, the developing antler covered with skin bulging out from here.

The speed of growth is indeed phenomenal. Anatomist W. Modell's classic study found that it skips the cartilaginous stage usual to long bones, ossifying directly from fibrous tissue. The spongy bone that forms then is actually continuous with the cavity of the skull itself. Sharing its blood supply, it is richly nourished and grows so fast that by September the complex antler with its many branches is full size. The bone becomes dense and the blood supply is finally cut off. The skin covering dries up, hanging in tatters until the bull elk, scraping his new antlers against rocks and trees, wipes them clean.

While marveling at antler growth, Modell views the result with a jaundiced eye. The tall bony headpiece is so heavy, the bull frequently rests his chin on the ground for relief. As weapons, branched antlers are not so hot, for battling bulls not infrequently get hooked together. Struggle as they will, they cannot pull free, or even break their antlers to get loose, and so both perish. Antlers are no good for fresh out calf defense, since they are only in the very tender growing stage when the calves are born. Most ironical of all, often the winners of the best harems are bulls with poorly developed antlers who are actually better fighters.

Pondering all this, he suggests that maybe antlers evolved not as weapons but as a hot weather cooling system, the growing antlers with their expanse of skin laced with so many blood vessels and bearing sweat glands being an ideal place to unload heat. Certainly this air conditioning would be a help for the big males in hot dry areas with so little shade. Female elk never did develop antlers perhaps because they spend more time in the shady concealment with their youngsters, so they will not have this cooling advantage. But there will be some way around the excessive heat problem and they're just the girls that will find it.

Viewing the long record of the elk tribe's enterprise in overcoming adverse conditions, scientists are betting that those moving now into the new dry lands to live the year around, will make a big success of it. □



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*Interior walls of Quarai's Purisima de Concepcion mission, seen from the convent through a breach in the east wall. Recesses in the opposite wall were for the huge vigas, or beams, supporting the roof.*

# MISSION PUEBLOS OF SALINAS PROVINCE

by EDWIN D.  
ANTHONY

CROSS THE blue Manzano Mountains from Albuquerque lies an ancient and mysterious land, known today as the Estancia Basin. Spanish explorers arriving there in 1581 found some 10,000 people living in 11 pueblos, some already hundreds of years old. Over the next century, Franciscan padres established six missions in the region. At last, during the 1670s, the entire area was abandoned to the elements and the wild Apaches, until the Americans arrived with their cavalry 200 years later.

The magnificent and hauntingly beau-



tiful ruins of the missions of the old Salinas Province, as the Spanish called the area in the 17th century, are among the most impressive mission ruins in the Southwest, and remain shrouded in mystery to this day. No one knows exactly when the pueblos were first settled by the Indians. Very few records of the missions have been found among the archives in Spain to give us details of the mission period. Even the identity of some of the mission pueblos took researchers decades to determine.

By the 9th century A.D. a trickle of Rio Grande Anasazi, forebears of the Pue-



blos, had begun to make their way over the mountains into the Estancia Basin. The abandonment of the great Anasazi cities of Mesa Verde, Chaco Canyon and others in the Four Corners region during the 13th century, probably brought the greatest number of prehistoric immigrants to the area. They began to recreate their civilization, constructing large, well-built homes of stone, mostly in protected sites near springs and streams at the foot of the mountains.

The Spanish first penetrated the remote valley in 1581, but missionary activity did not begin until 17 years later.

sometime between 1615 and 1620, under Peinado's direction. No documentary record mentioning the church has ever been found, so no definite dates or people can be associated with it.

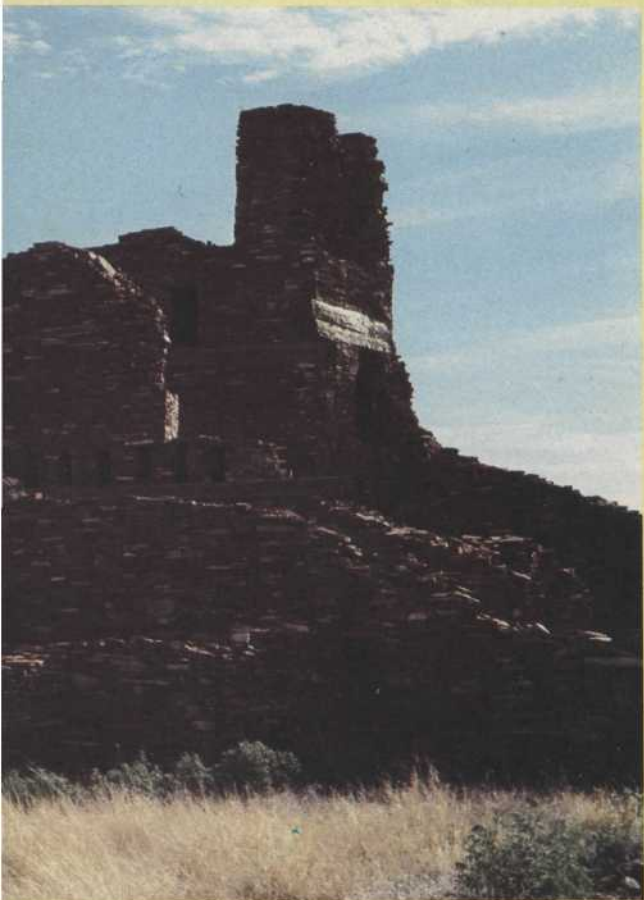
Between 1628 and 1630 churches were built or commenced at Chilili, Tajique, Abo, Tabira, Humanas, and a second, larger one at Quarai, called *Nuestra Senora de la Purisima Concepcion*. The last major construction project was begun in 1659 when it was decided that Humanas needed a larger church than the one built in 1629 and dedicated to San Isidro. The new church, named San

Buenaventura, was an impressive structure with a fine convent to house missionaries. During most of this period the headquarters for the province was the immense San Gregorio mission at Abo, begun in 1629.

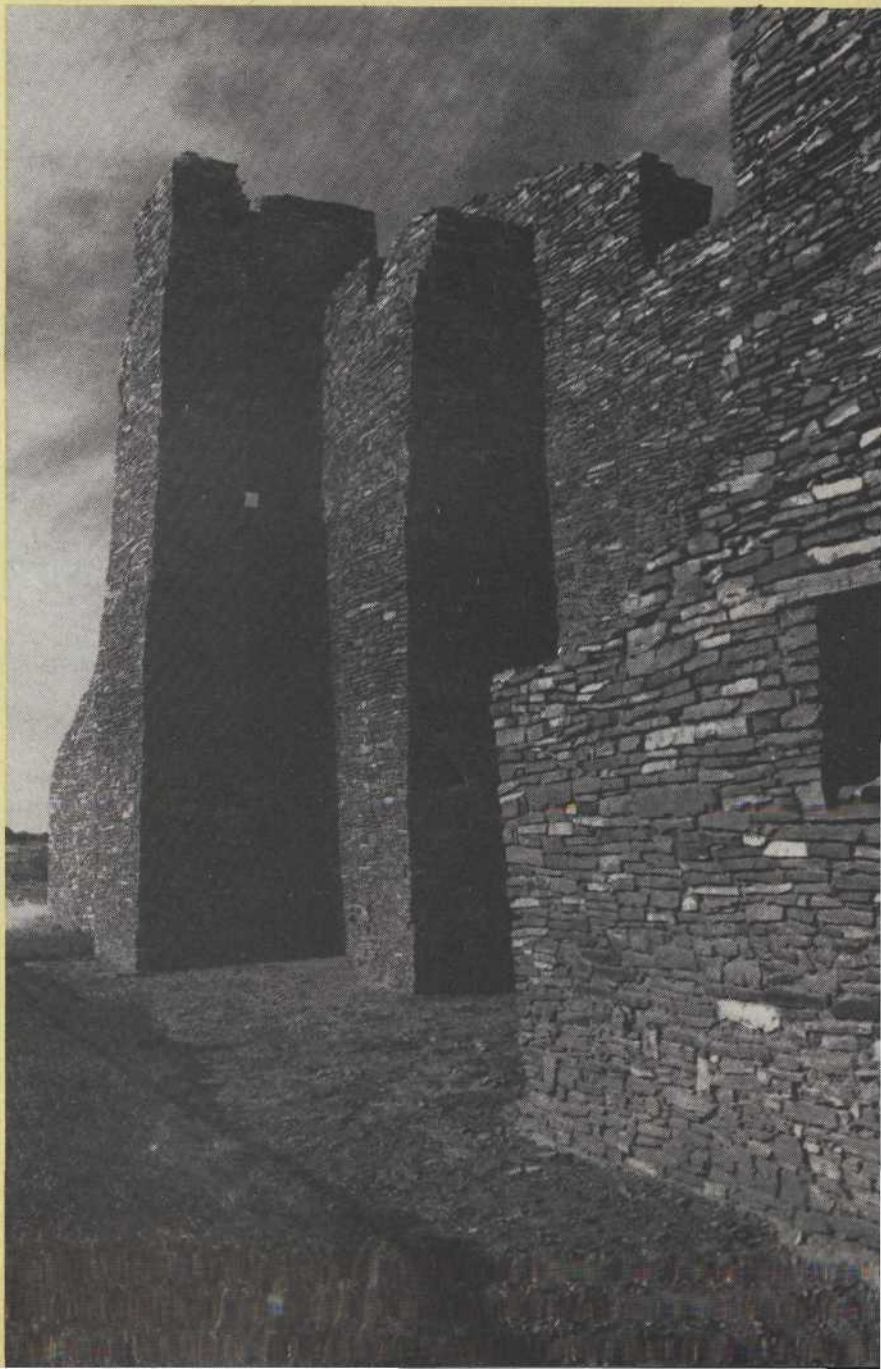
The missionary efforts were a ringing success when measured in terms of converts baptized and churches built. But although every effort was made to eradicate the native religion, the Indians secretly continued to practice the rites handed down to them by their ancestors. Somehow, this was even carried into the convents themselves at Abo and Quarai, where *kivas*, ceremonial chambers for ancient Indian ritual, are found right in the monasteries.

The Indians of the Salinas province were first-rate farmers, growing their traditional corn, squash and beans, and

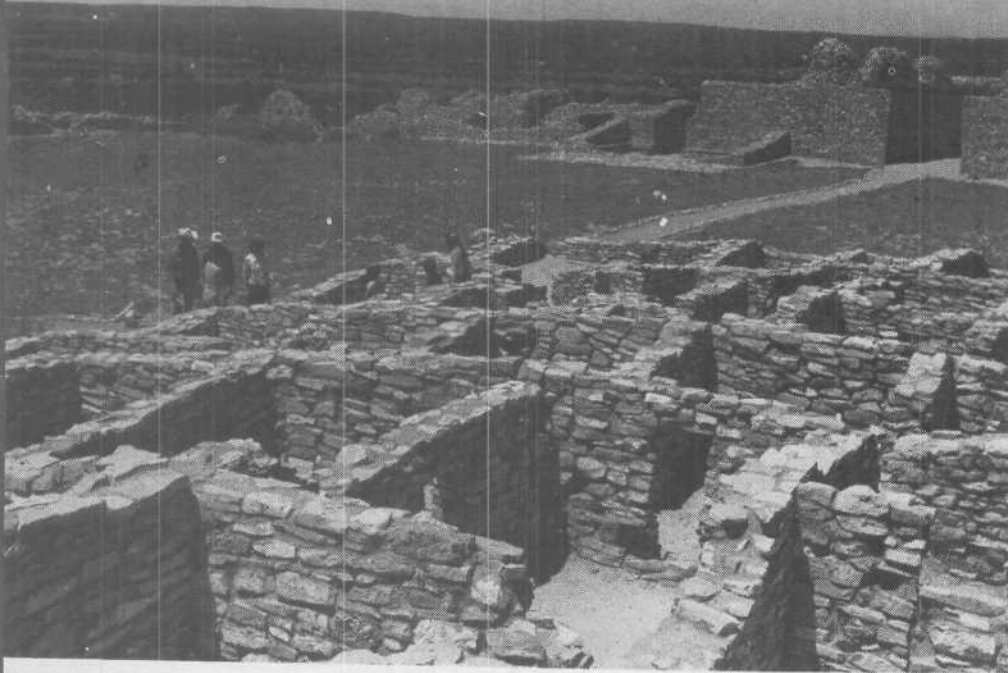
*Left: Mission San Gregorio de Abo, built about 1629 by Fray Francisco de Acevedo. Below: Massive wall at Abo is testimony to the skills of the Indian stonemasons.*



In 1598, Juan de Onate led the first European colonizing effort into New Mexico. That year, Fray Francisco de San Miguel, one of Onate's chaplains, began preaching occasionally among the Tiguas at Quarai and the Piroas at Abo, Tabira and Humanas, as the Spanish called Cueloce, traveling from his headquarters at Pecos. The earliest permanent missionary activity in the province was undertaken about 1612 when Fray Alonso de Peinado began working among the Tiguas at Chilili. One of the first churches was a small one discovered at Quarai in 1959, possibly built







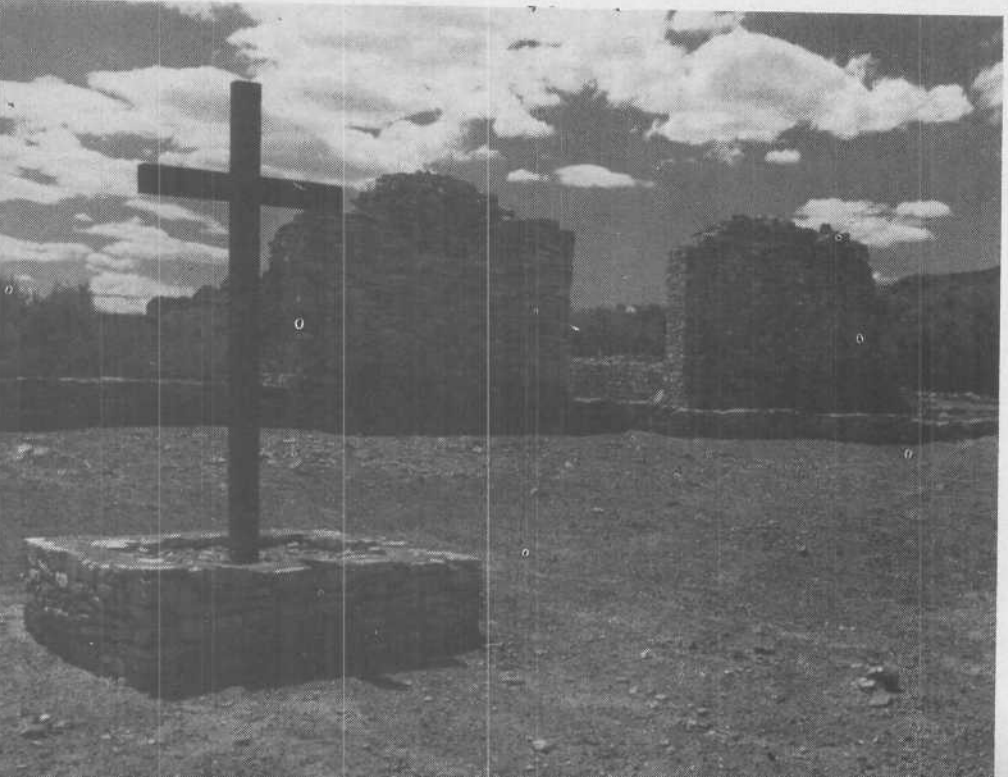
*Visitors inspect the convent of San Isidro at Gran Quivira, converted from Indian pueblo rooms when occupied by Fray Francisco de Letrado in 1629. In the background are Mission San Buenaventura, built in the early 1660s by Fray Diego de Santander, and its roomy convent. In the distance are fields worked for centuries by the Piro inhabitants of the ancient pueblo.*

the wheat introduced by the padres, in fields near their pueblos. Under the Spanish *encomienda* system, they were also required to tend the fields, orchards, herds and flocks belonging to the missions. Until the 1660s, they traded with nomadic plains tribes, including the Apaches, who were moving into the

Southwest from the north. The Pueblos traded corn, salt and cotton blankets for dried meat and buffalo hides.

The beginning of the end for the Salinas missions came during the 1660s, when the dreaded hands of the classic scourges of famine, pestilence, war and death took hold of the province. For

*San Isidro mission at Gran Quivira National Monument, constructed about 1629 under Fray Francisco de Letrado. View is across the Campo Santo, or burial ground.*



much of the decade the Southwest suffered one of its periodic severe and prolonged droughts, preventing the harvesting of vital crops. During one year 450 people died of starvation at Humanas. The scarcity of food and the Pueblos' close relationship with the hated Spanish turned the Apaches into ferocious enemies. Raiding fearlessly from horseback in lightning-fast, bloody forays, the new terrors of the Southwest turned life in the unprotected Salinas province into a continuous nightmare. In their weakened condition, the people fell easy prey to the ravages of disease as well, and many died in a great epidemic in 1671.

Beginning in 1670 or 1671, the Salinas province was gradually abandoned. The exodus seems to have been orderly and peaceful, motivated largely by fear of continued Apache depredation. Abo was apparently deserted first, starting around 1670, followed by Humanas in 1671 or 1672. The Tiguas of Quarai and Chilili are thought to have left their pueblos in 1676 or 1677, briefly taking refuge with their relatives at Tajique, before it too was abandoned. By 1678 the whole province was unoccupied. Most of its former inhabitants joined their kin along the Rio Grande at Isleta, Socorro and Senecu (present-day San Antonio), New Mexico.

When the Pueblo Revolt of 1680 broke out, forcing the Spanish to take leave of the entire colony of New Mexico, many of the Salinas refugees joined the Spanish in their retreat south to El Paso and reconstructed their pueblos there. The missions they built adjoining them were the first in what is now Texas. The present communities of Ysleta and Socorro on the Texas side of the Rio Grande, and Senecu on the Mexican side, trace their roots back to the lovely valley at the foot of the Manzano Mountains. Only the Tiguas of Ysleta del Sur remain culturally intact to the present day.

The pueblos and missions they left behind slowly crumbled into ruins. At Chilili and Tajique virtually nothing is left. Tabira, now referred to by its Spanish name, Pueblo Blanco, is unexcavated and not open to the public. Quarai, Abo and Humanas have seen extensive repair work and excavation, and are now dignified and awe-inspiring ruins. Churches and convents have been cleared of debris and walls stabilized at all three. Parts of

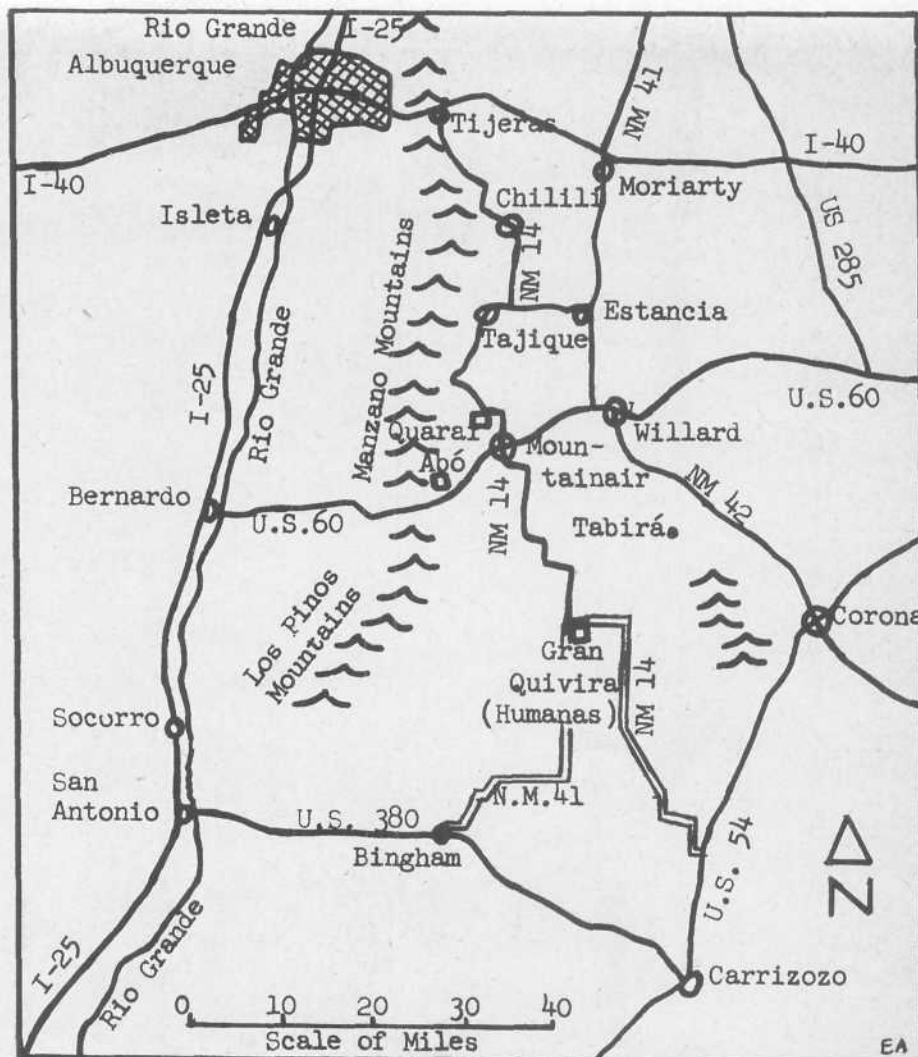


the Indian pueblos have also been excavated and stabilized at Quarai and Humanas.

What archaeologists unearthed is unique in Spanish New Mexico. As 17th-century missions go, Purisima de Concepcion at Quarai, San Gregorio de Abo, and San Buenaventura at Humanas, are large. They are cruciform in shape, which is unusual for that period, and were constructed of relatively small, thin stones, rather than the adobe used elsewhere. The highly skilled masonry closely resembles that found in the Anasazi cities of Chaco Canyon, built by the ancestors of the Pueblos. At Humanas, a blue-gray limestone was used, while at Abo and Quarai, red sandstone provided the primary building material. The stone is readily available in the area. The massive walls vary from four to 10 feet thick and up to 50 feet high. They bore huge, finely-carved, roof-supporting vigas, or beams. Logs for the vigas were brought from the mountains, which were close by at Quarai and Abo. At Humanas they are believed to have been hauled from the Gallinas Mountains 15 miles to the east. Most of the wood and beams are now gone, much of it apparently "salvaged" by early homesteaders.

Quarai and Abo are preserved as state monuments, retaining their traditional names. Humanas, known as Gran Quivira since the last 1700s, has been a national monument since 1909. Just how Humanas acquired its present name is not known. Quivira was the legendary land to which the Indians lured Coronado with tales of fabulous wealth, hoping to lose him in a wild goose chase on the Great Plains. Since then the name has found many homes throughout the Southwest, showing up on old maps from the Great Plains of California, before settling down at Humanas.

Gran Quivira and Quarai have small visitor centers with displays of artifacts found at the sites and depictions of mission and pueblo life. Someone is always on hand during office hours to answer questions. Both provide self-guided tours of the ruins and have picnic areas and restrooms. There are no facilities at Abo, and a chain-link fence encloses the ruins, preventing entry to the public. This was done because of the deteriorating condition of the walls, which poses a danger to visitors until further stabilization is done. A bill now pending in Con-



gress would bring Abo and Quarai into the National Park system, forming a unified national monument with Gran Quivira. This plan could provide sorely needed funds for further excavation and stabilization at Abo and Quarai.

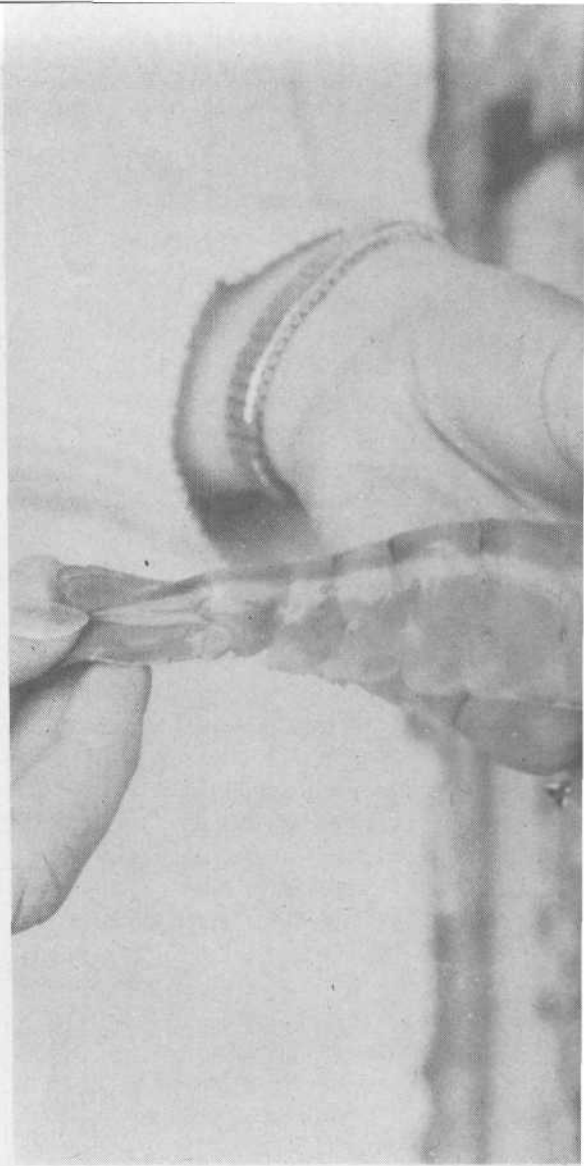
The ruins of the Salinas mission pueblos are easily reached on good, paved roads from all directions except the south. From east or west, take U.S. 60 to Mountainair and follow State highway 14 south 25 miles to Gran Quivira or north eight miles to Quarai. Abo is located about a mile north of U.S. 60 from a junction about 10 miles west to Mountainair. From Albuquerque, the trip south on State 14 from Interstate 40 makes a fascinating drive through picturesque villages nestled up against the Manzanos. From the south the shortest way is to take U.S. 54 north to State 14, about 16 miles north of Carrizozo. From there to Gran Quivira, State 14 is 38 miles of dirt road. In good weather the road can be negotiated by passenger car, but it is advisable to have plenty of gasoline and water as there are no services

along it. If rain or snow threaten, it would be foolish to attempt to take this route. Alternative routes from the south are either up Interstate 25 to Bernardo and then east on U.S. 60 to Mountainair, or north on U.S. 54 to Corona, turning left on State 42 to Willard. From Willard take U.S. 60 west 12 miles to Mountainair.

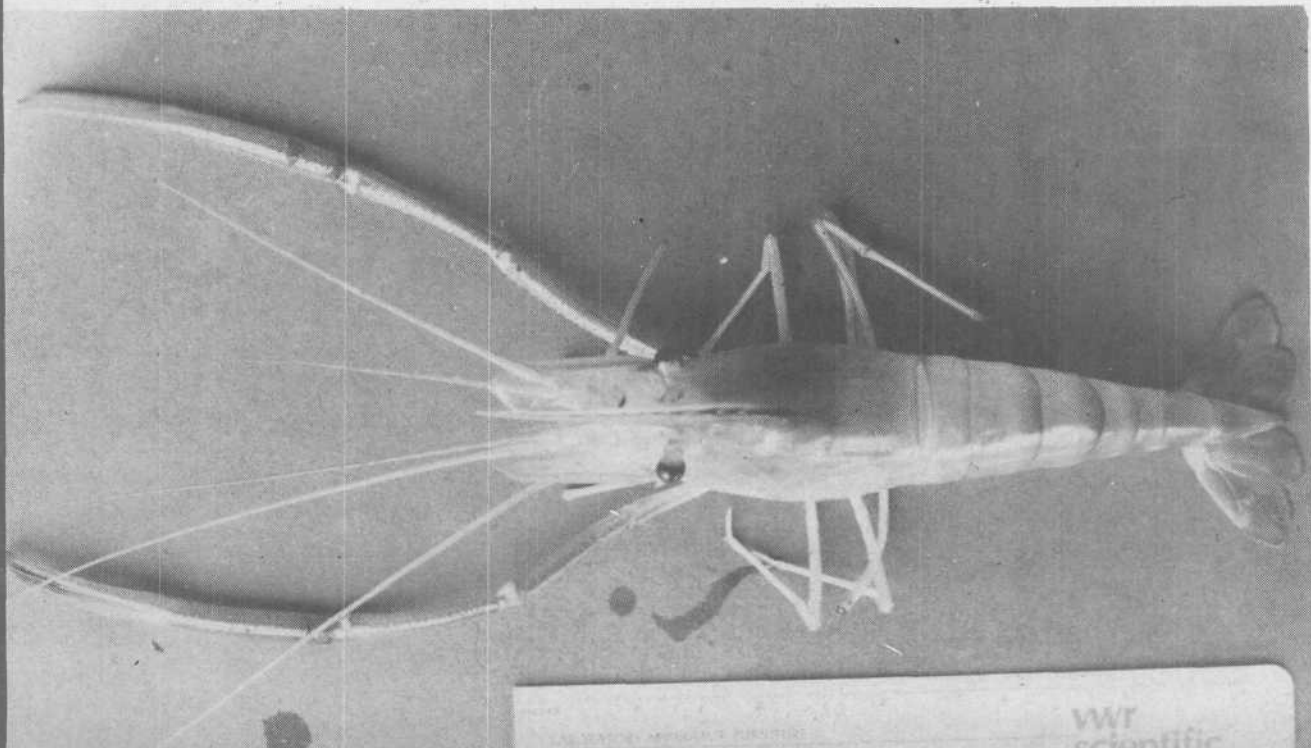
There are no overnight facilities at any of the monuments. Motels and restaurants are available in Mountainair. The nearest campgrounds are at Manzano State Park, about five miles north of Quarai, and in Cibola National Forest in the Manzanos.

Although less well-known and visited than some pueblos and missions in the Southwest, for beauty, grandeur and mystery, the ruins of the old Salinas Province are hard to match. Historian Charles Lummis's description of Quarai is equally applicable to its sister missions at Abo and Gran Quivira: "On the Rhine it would be a superlative, in the wilderness of the Manzano it is a miracle." □

# TROPICAL PRAWNS in NEVADA'S DESERT

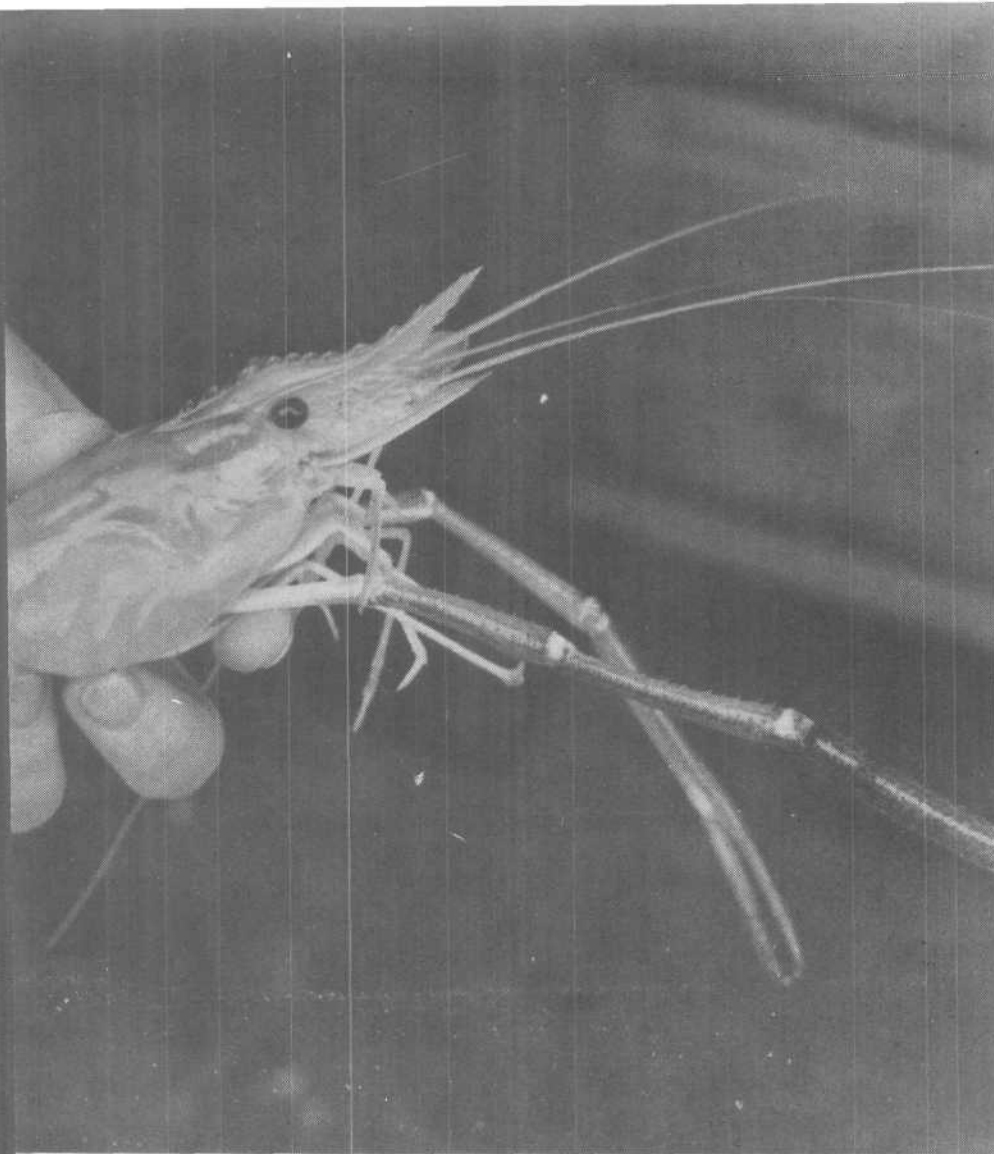


by GRACE GAYLORD



Market  
size  
prawn.





Well-developed specimen  
of *Macrobrachium rosenbergii*.  
Photos courtesy  
University Nevada, Reno.

**M**ALAYSIAN fresh water prawns, a gourmet treat, were harvested on March 6, 1978, from the cooling ponds of the Fort Churchill Power Station near Yerington, Nevada. Dr. Robert Taylor of the University of Nevada, Reno, developer of this new desert industry, predicts a bright future for prawn aquaculture in the thermal springs of the western desert regions. The conservation of natural resources, and a growing market makes this a feasible venture.

Although the site is not yet open to the public, Dr. Taylor invited us to watch the harvest. As we drove north from Yerington, green fields of winter barley looked as if they were painted on the desert floor — a startling contrast to the gray sagebrush and the leafless cottonwood trees lining the Walker River. Cloud shadows made black brush strokes on the hills and herds of cattle grazed on the white sandgrass.

After a 10 mile drive north on U.S. 95

Alternate, we turned east, and ahead of us the power station stretched its bones of steel into the sky. A phone call from the gate admitted us to the grounds and we drove to the cooling ponds. There are several on the property, the colder ones stocked with fish and open to the public for fishing in season, the two smaller hot ponds for growing Malaysian Prawns [*Macrobrachium rosenbergii*].

It was here we found Dr. Taylor and his aide, Maynard Hanks, wearing rubber hip boots and seining the water. They were tossing large delectable prawns from the net into buckets. The pond was murky, and one end covered with styrofoam pellets to keep the water at the desired temperature. In order to increase the effective pond area, vertical nets had been hung so the crustaceans could cling to them. Some males had bright blue legs; some females carried their orange eggs under their bellies.

Maryanna Enochson, the laboratory secretary, counted and weighed some

6460 prawns. Larger ones were kept for a market study, and smaller ones put into an adjacent pond for later harvest. Dr. Taylor told us that in a full growing season the harvest would be 2000 pounds per acre. Giant prawns can grow up to one-half pound or more and some preserved specimens caught in the wild weigh as much as five or six pounds. The prawns, marketed both as a fresh and frozen product, are considered a delicacy, more like lobster in taste than shrimp, and sold in the price range of lobster.

The work continued all day until at last the water was drained and the remaining prawns — leaping like huge grasshoppers — were caught in hand nets. According to Dr. Taylor, these giant prawns were discovered 20 years ago in a southeast Asian market place by Dr. Shao-wen Ling of mainland China. A fisheries specialist, now living in Florida, he began breeding the prawns and found that although the larvae were readily produced, all the "babies" died within a few days. Puzzled by this, he experimented — feeding the larvae tea, fish and other food products from his own dinner table. Still they died. One day in desperation, he added soy sauce to the water. Much to his delight and surprise, they survived. He realized that although these prawns are fresh water crustaceans, they migrate to the brackish water of estuaries of hatch their eggs. The salt in the soy sauce was the secret to success.

Dr. Taylor's brood stock came from Hawaii where the Giant Malaysian Prawn was introduced by Dr. T. Fujimura, now director of Anuenue Fisheries Center of the Hawaiian Department of Land and Natural Resources. Taylor housed his stock in tanks at the fishery laboratory located in the Veteri-

Dr. Fujimura's  
FRIED GIANT PRAWNS

- 1/4 lb. prawns
- 7 cloves garlic
- 2 red peppers
- 1 T. ginger strips
- 2 green onions
- 2 T. sherry
- parsley
- 1 tsp. sugar
- 1 tsp. thick black bean sauce
- 2 tsp. sesame oil
- 1 1/2 T. oyster sauce
- dash pepper
- 1/4 tsp. salt
- 5 T. water
- 2 tsp. cornstarch

1. Shell prawns.
2. Chop garlic and red pepper.
3. Heat "wok" until very hot; add 3 T. cooking oil, add prawns and fry to golden brown. Add chopped garlic, red pepper and ginger strips. Fry and add sherry and other ingredients. Cover, let stand briefly and serve.

Dr. Fujimura's  
STEAMED FRESH WATER PRAWNS

- 1 lb. prawns
- 1 egg white
- 1 stalk celery
- 2 green onions
- 1 red pepper
- 2 oz. ginger (1 oz. for strips, 1 oz. for juice)

1. Cut prawns into halves, longitudinally.
  2. Place prawns, cut side up, with following ingredients and steam 6 to 8 minutes:
    - 2 tsp. sesame oil
    - white pepper
    - 1 tsp. sugar
    - 3 T. soy sauce
    - 2 T. ginger juice
  3. When prawns are cooked, pour juice into "wok," add the following and bring to boil:
    - 1/2 C. stock or water
    - 1 tsp. sugar
    - red pepper strips
    - 1 beaten egg white
    - more soy sauce to taste
- Add to prawns, garnish with green onions and parsley. Serve.

nary Medical Center of the University of Reno. Here the eggs were hatched in tanks of brackish water and the larvae successfully raised through the 12 moults preceding the post-larval stage. They were then taken to holding ponds at the university until they reached a larger juvenile size. Transfer to the grow-out ponds was made in plastic bags containing water and oxygen and placed in styrofoam boxes.

Commercial culture of the Giant Malaysian Prawn now thrives in Hawaii, Puerto Rico and Florida without artificial heat sources. "Ideally, Giant Malaysian Prawns need water between 80 and 90 degrees Fahrenheit," says Dr. Taylor, "but they can survive in wider temperature ranges as well." The waste warm water at Fort Churchill Power Station varies in temperature with the seasons. Since the prawns can tolerate some change, and funds were made available by Sierra Pacific Power Company, this location was chosen by Dr. Taylor for the pilot project which began in October, 1976.

Dr. Taylor is now expanding the prawn project in geothermal ponds on a Smith Valley ranch 15 miles to the southwest of Yerington. The west has many such hot spring areas which could be adapted to this aquaculture. Dr. Taylor says that ranchers and other individuals have shown a great deal of interest in prawn farming — one reason being minimal labor costs. Mike Sullivan, Environmental Specialist for Sierra Pacific Power Company, says that the company is considering leasing its ponds for the purpose.

But for now, "One major problem still to be resolved in commercial production is the food cost," says Dr. Taylor. The prawn larvae are fed brine shrimp larvae supplemented with fresh fish eggs. After they are transferred to fresh water, they are fed a combination of trout pellets and Purina Marine-25 Shrimp diet but a less expensive food product will be found.

The shrimp market is a billion dollar business and is increasing at a rate of about 10 percent a year. But the real value of this new desert industry is not only the gourmet-class shrimp, but also the profitable use of the waste energy.

Gold is still mined in the desert. But wouldn't the old timers be surprised to see we're now mining seafood? Get ready for the feast! □

# 'Desert' Hidden Word Puzzle

Almost everyone likes to do puzzles and this one should appeal to DESERT readers as all the hidden words relate to the magazine or the Western Deserts in general.

This mind-boggler was compiled by James M. Kennedy, of Menlo Park, California, who just happens to be an avid subscriber.

If you would like to send in your solution (with a minimum of 100 words found), use a photo copy, a drawn facsimile, tracing or the page itself. Mail to "Contest," P. O. Box 1318, Palm Desert, California 92260. Entries will close February 20th. A blind draw will determine the winner who will receive a check for \$25.00. The winner will be notified by mail.

A solution key and the winner will be announced in our April issue.

Happy hunting!



There are 171 words listed below which relate to Desert Magazine or the Western Deserts in general. They read forward, backward, up, down or diagonally.

Agate	Grub	P O W W O W E N S K I N K R G H O S T T O W N T B
Agave	Guide	I R O C K H O U N D L R C E O O D A I W R D I R A
Amboy	Gully	N R O H G N O L U L E P O T H O L E L L E N I E O
Anasazi	Gun	E U A S H A F T I D O T R A T U O D S T V S E A M
Ant	Gunsight	S B C O P P E R N I A H W R S P G E S E T E S S P
Apache		I E R O D E D I S X Y N O C I R S A I L R I R U A
Arid	Heal	O L L I T O C O L O R A D O U Q L L E O S T M R N
Arizona	Hike	U A B D T E N T L F P H N B U B O C O C H I S E O
Art	Hog	Q M N R O C A I O A S E I A I J O L R A C R M R R
	Hopi	R U O I T M T S C I E L W K A N F T E E P E E W A
BLM		U Y I A E E S H T R L A S V E G A S C M S E T A M
Bag	Idria	T P T L E I E E E G A B A A O T R A A A E V A G A
Beg	Iguana	U T A H L A F N E T U N D L B L M L V L O O T O D
Bill	Inyo	R R E R A D I O Y N I L G L Y B C E E K A L E N A
Bin		T A R V D N E H E H S N L E O A R A R I Z O N A N
Blast	Javelina	L I C S Y T T O C S O L K Y N E M O N E V A D A O
Blossom	Jean	E L E T A N I O A T S N I A E U A F S O L A A G J
Borax	Jojoba	R H R S N A K E N E O U U M P D G S B N Y T O N E
Boynton		I O E S A L T Y A D C G O H R D O S E O K N T N T
Bristlecone	Kite	F P G A S O U T H G I S N U G U I D E M E D I A I
Burro	Knyvett	L I N K A B O J O J S U N L A D T L O U T M O P R
		D R A Z Z I L F N O E N O I I V N J A L A S S O O
Can	Lady	U O R U I C A O L K E A O A E P A S B E G O R F U
Car	Lake	M I N I N G P B O R A X N J A V E L I N A I R I L
Caverns	Lasso	P I C A C H O P S T R O N G E M I G R A N T D Q F
Chia	LasVegas	
Cibola	Lava	
Cinder	Lie	
Clam	Link	
Cochise	Longhorn	
Colorado	Loot	
Copper		
Coso	Malki	
Crater	Mates	
	Media	
	Mesa	
Dale	MesaVerde	
Day	Metate	
Deal		
Deserts	Mining	Pinyon Scotty Squaw Tejon Treasure Wagon
Dig	Moab	Pioneer Sea Strong Tent Turquoise WindowRock
Donkey	Mojave	Poison Seam Sun Tin
Drill	Mono	Poke Seldom Tioga
Dump	Mule	Pothole Seen Slim TNT Tire Utah
		Powwow Shaft Talus Toad Ute Zinc
Emigrant	Navajo	Prospect Silver Tame Tone
Erode	Nevada	Puma Skink Taos Tool Valley
	Noon	Pumice Snake Tax Tote Veins
Fetish	Nut	Sod Teepee Trail Volcano
Fire		Quill
First Mesa	Oasis	
Floor	Obsidian	Radio Please enter me
Fluorite	One	Ramada in your word puzzle contest.
Fog	Onyx	Range
Foolsgold	Opal	Ranger
Fortyniner	Ore	Rat Name .....
Fossil	Owens	Rattler
Fox	Owl	Recreation Address .....
Frog		Rhyolite
	Panorama	Roadrunner
Gas	Pard	Rockhound
Ghost town	Picacho	
Gold	Pines	Salt City ..... State ..... Zip Code .....

# What's Cooking on the Desert?

by STELLA HUGHES

## Beef Tacos!

IN THESE DAYS of insulated ice chests, deluxe campers with gas or electric refrigerators, and ice available in every small hamlet, we forget the old ways of preserving meat and perishables. Before refrigerators, ranchers and homesteaders, in the dry Southwest,

could keep meat for days, even in the summertime. Nights being cool, beef was hung in a tree after sundown, where it would receive all the cool air available. In the morning, before sunup and pesty flies began buzzing around, the meat was taken down and wrapped in canvas and stored in a cool place. Under the bed was a favorite spot, or shoved beneath the porch; anyplace cool and out of the sun was O.K.

Care had to be taken that the meat was not rained on. If wet, beef would sour quickly. To prevent losing the meat, it had to be cooked at once. If boiled, when done, all the broth had to be drained off. This way the meat would keep several days longer. When all else failed, the meat was dried as jerky.

Back-packers, bikers or horseback riders, on a weekend trip, might remember some tips on keeping fresh meat for several days without ice. Fresh pork or poultry needs to be used the first day. If this isn't possible, sprinkle liberally with plain table salt, keep in a cool place, and before cooking, rinse well to remove the excess salt.

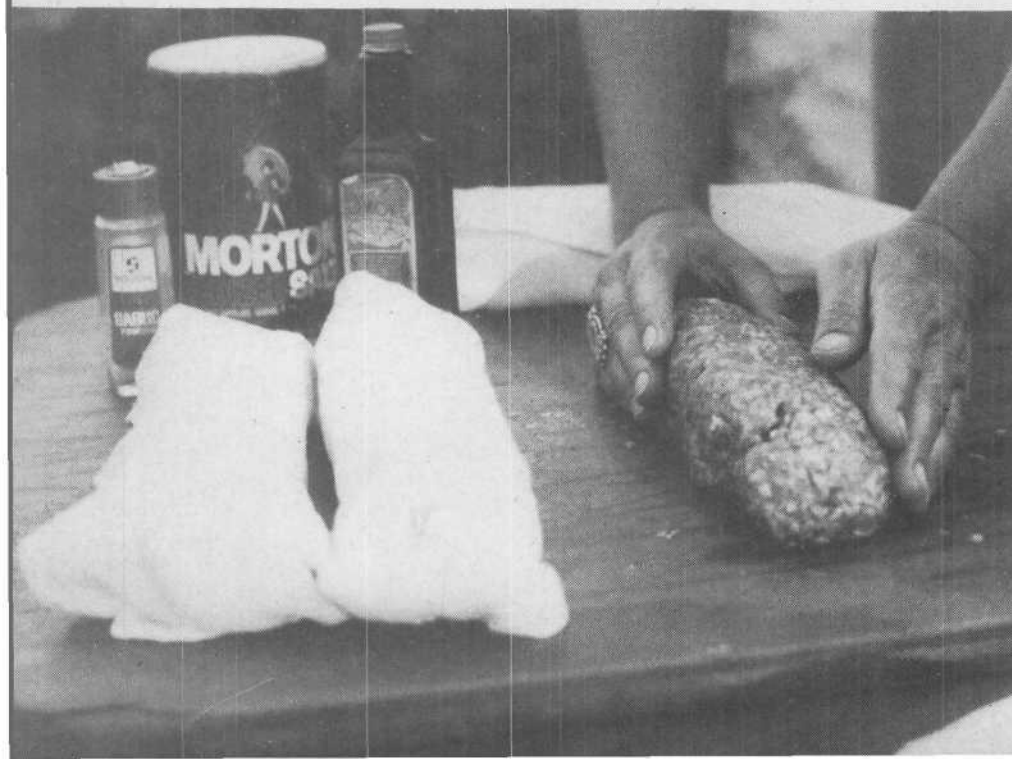
Beef usually keeps three times longer than any other fresh meat. Steaks or roasts, kept overnight, need to be unwrapped and placed where the cool night air can circulate around them. Steaks will dry out, so should not be kept longer than necessary.

If you are doubtful if meat is about to spoil, use your nose! It's easy to tell when meat is beginning to sour. Or feel it; if meat is beginning to be sticky, wipe with a cloth dipped in vinegar, and cook at once. Or meat can be placed in a pan of cool water with one teaspoon soda and a half cup of vinegar. Let marinate five or 10 minutes, drain, wipe dry and cook. It's amazing how vinegar and soda tenderizes a tough steak. It sure doesn't hurt pot roast, either.

Butter and fresh vegetables can be kept in camp by wrapping loosely in a cloth and placed in a container, which in turn rests in a shallow pan of water. The cloth should touch water at all times, and the food is cooled by evaporation.

On a pack trip, fresh eggs can be packed among rolled oats in the box. You first have to remove some of the oats to make room for the eggs, of course. After

*Wrap sausage in muslin or cheesecloth, tucking ends under, bake as directed.*





using the eggs you can have oatmeal.

Hamburger can be made into sausage for camping trips. Now, don't panic, anyone can make beef sausage, and you don't need to butcher a pig, build a smoke house, or buy a sausage stuffer and meat grinder.

#### Easy Beef Sausage

- 4 pounds of hamburger
- ¼ cup of curing salt
- 2 tablespoons liquid smoke
- 1 teaspoon garlic powder
- 1 teaspoon oregano (optional)
- 1½ teaspoons coarse ground pepper

Buy half hamburger and the other half the best ground round beef; or you can buy all four pounds of ground round beef. I don't advise using all cheap hamburger, as it tends to shrink too much. You can purchase the curing salt at most meat markets. *Morton Tender Quick* is easy to use and contains the finest quality salt and a combination of meat curing ingredients. Remember to use garlic powder, not garlic salt. *Wright's Bar-B-Q Liquid Smoke* will give your sausage a real hickory flavor. You can use coarse ground pepper or whole peppers. Sometimes I crush, slightly, whole peppers with a rolling pin. There are several variations in making beef sausage, such as adding crushed chili pods. However, try it this way once, then branch out by experimenting with other seasonings.

Mix all ingredients into hamburger with your hands, then put in large bowl and chill for 24 hours. This is necessary in order for the curing salt to do its work and the flavoring to "set."

After chilling, divide meat into four equal portions. Have ready four squares of toweling or cheesecloth, about 15 inches wide. Pat each portion of meat into a firm, smooth roll with your hands. Try to press out all air pockets and shape it up nicely.

Wrap each roll separately in cloth, tucking ends under. Place on oven rack, with tucked ends on the bottom. Place a drip pan under the sausage rolls, and bake at 225 degrees for four hours.

When done, remove toweling and let cool. It will be a light mahogany color and very firm. You can start eating it right away or store in your refrigerator. For long keeping it is best to freeze. However, this sausage keeps very well without refrigeration for several days.

It's a dandy way to prepare meat for snacks on pack trips. It goes great with cheese and crackers.

This beef sausage goes hand in hand with cold beer, and isn't a bit out of place on a snack tray at the swankiest cocktail parties. So make up several batches and store in your freezer for those unexpected callers. It barely needs a moment or so at room temperature before you can start slicing it. Dips or cream cheese on your favorite cracker can make a meal.

#### Beef Taco Hot Roll Round-up by Nancy L. Wilson, Globe, Arizona

- 1 cup milk
- ¾ cup cornmeal
- 2 envelopes taco seasoning mix
- 1 package hot roll mix
- ¼ cup warm water (105-115)
- 1 egg
- 2 pounds ground beef chuck
- ½ cup chopped onion
- 1 can chopped olives (4¼ oz. can)
- 1 can diced green chiles (4 oz. can)
- ½ cup water
- 2 cups (8 oz.) shredded cheese (Cheddar)

Heat milk. Stir in cornmeal and one tablespoon seasoning mix, reserving remainder. Cool to lukewarm. In large bowl, dissolve yeast from hot roll mix in ¼ cup water. Add cornmeal mixture, egg, 1½ cups hot roll flour mixture and beat two minutes at medium speed. By hand stir in remaining flour. Cover; let rise in warm place 30 to 45 minutes. Brown ground beef; drain. Add onions, olives, chiles, remaining seasoning mix and ½ cup water. Simmer 15 minutes; cool. Grease 10- or 12-inch tube pan; sprinkle with 1 tablespoon cornmeal; punch down dough. On well-floured surface, knead until smooth and elastic, about four minutes. Roll out dough on a well-floured surface to 15 x 12 rectangle and spread beef filling to edges. Spread with 1½ cups cheese and starting with longer side, roll up tightly and seal. Place sealed edge down; rise until double (30 to 45 minutes). Bake 40 to 45 minutes in 350° oven. Cool 5 minutes, invert on plate, sprinkle with remaining cheese. Serves 10.

Winner of 1978 ARIZONA BEEF COOKOUT, sponsored by Arizona State Cowbelles.

## POTTERY TREASURES

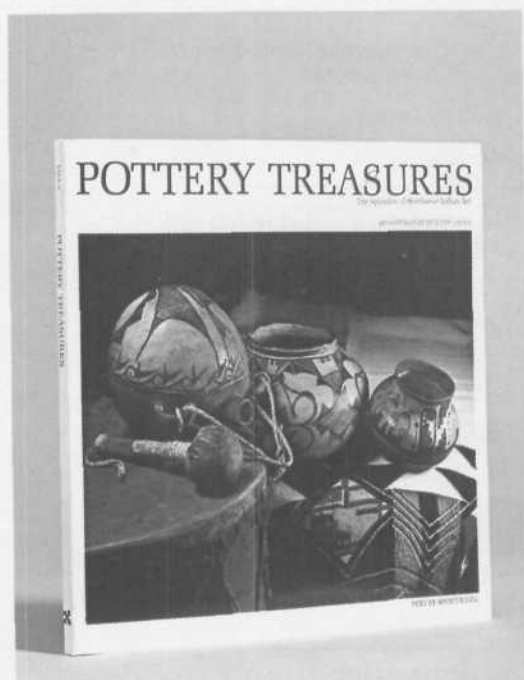
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## WHEELS FOR BAJA

Continued from Page 23

larger tires. This size engine will also give you 13-17 mpg on the highway, depending upon gearing, and equivalent better economy in the rough. As to the gearing, there isn't much available in the way of alternate ratios. Front and rear ratios must be the same for 4WD usage and they'll range between 3.70 and 4.11 with the higher numerical ratio, of course, requiring less power but more gasoline. Some form of locked differential (Pos-A-Traction) is desirable at the rear but sometimes causes squirrely handling when installed on both axles. You can recognize this installation by decals warning you not to put the car in gear with the engine running and one driving wheel jacked off the ground.

You'll absolutely require free-running front hubs for vehicles not equipped with "full-time" 4WD. Experts still prefer the manual type of hub to the automatic and extend this preference for "positive" control by favoring a manual to an automatic transmission. That last is debatable. In fact, most times on bad roads you'll be shifting both types manually through the three or more forward speeds in each of the two ranges provided by the reduction gears. I personally favor an automatic because you have one foot free at all times to control the foot brake and also for its torque multiplication feature when starting out. However, I kept my three-speed Toyota manual transmission because one of these has seldom been known to break. Someday, I hope to combine it with an overdrive, those being available on the aftermarket. Whatever combination you choose, though, the prime requirement is ruggedness.

When you get to Baja, you'll see many of the locals driving around in old, ex-military, four-cylinder Jeeps. I speak of the Americans living there; most native Mexicans can't even afford these but in any case, you may wonder why I suggested spending money on more power when you've already got reduction gears that theoretically will take you any where. The reasons are three-fold: 1) you'll actually be on bad roads only a small percentage of your total mileage so you'll want passenger-car standards of performance on the highway; 2) a big,

low-revving V-8 is more durable by far than an over-worked, over-extended four or six; and 3) the locals know every foot of the terrain and you don't so you'll be making mistakes, and you'll probably need power to get out of them. But whatever the engine, it must be tuned to run on gasoline which even in premium (Silver Pemex) form is inferior in anti-knock quality to our leaded regular. And despite their obvious merits, forget about diesels as fuel for these in Baja (or here too, for that matter) is hard to find away from paved roads.

Mention of gasoline brings to mind problems with emission controls when installing a late-model engine in an older vehicle. Expecting requirements for basic controls such as a PCV valve, no laws have yet been written in any state to cover these specialized installations. You certainly won't have to go out and buy a catalytic converter just because you're installing a so-called "no-lead" engine. That engine will run fine, perhaps even better, on leaded regular. So hook up those devices that you can and forget the rest. In most states, vehicles are registered according to the year and make of the chassis, not the engine.

Tires and rims are a vital consideration because improper selection can spoil an otherwise excellent vehicle. I settled for 10x15 LT tires on seven-inch rims by default due to imagined clearance problems. I wish I had 11'15 LTs on eight-inch rims but neither I nor my then tire dealer realized that the wider rim was off-set to compensate for clearance. I speak here of tires rubbing against the steering linkage in full-lock turns, not wheel-well or spring-travel clearance. So, the first lesson is to pick an experienced dealer for your wheel and tire needs because once you choose your size, you're stuck with it unless you want to spend upwards to \$500 to correct mistakes. You can't mix different tire sizes on a 4WD vehicle because as I've mentioned, the overall gear ratios, front and rear, must match.

I've tried various brands of "off-road" tires and they all shared some undesirable characteristics. Those that would wear more than 12,000 miles or so were so noisy that you couldn't hear your radio at speed. Those that were reasonably quiet wore out prematurely. Then, the more rugged the tread, the more irregular the wear. All types were diffi-

cult to balance, hard to steer once partially worn, and unnecessarily hard riding. But I never had a complaint about traction with any except one tread type and traction is the name of the game if you want to get back home. The tread that didn't work was a single vee which would dig into soft terrain and bury itself.

It finally occurred to me to question the real need for "rugged" or "aggressive" tread designs so I installed a set of 15x10 LT Sears Adventurers which are 6-ply rated, nylon-reinforced tires normally specified for 2WD pickups, with or without campers. I recently drove these the length of Baja and return, staying on bad roads as much as possible, and never once had traction problems. Terrain included climbing solid rock, miles of broken sharp rock, foot-deep soft sand, a 15-mile stretch where the "road" was the muddy bed of a flowing stream and, of course, graded dirt roads as well as pavement. These tires now have the once terminal 12,000 miles accumulated and they are less than one-third worn. Steering ease and precision improved dramatically as did handling and to a lesser extent, fuel economy. Traction on wet pavement is excellent which can't be said for most off-road tires. This experience has sold me on the idea of a relatively narrow, normally patterned tread for most bad-road usage because there is less rolling resistance. Tires of this type are available from practically all manufacturers.

Next month on these pages I'll discuss outfitting your Baja Cruiser so that two people can stay away from civilization a week or more in comfort and Safety. Dick Cepek, one of the major suppliers of this type of equipment, coined a trademark "Baja-Proven" and I now know what he means. Failure of a two-bit item can sometimes cause as much grief as three simultaneously flat tires. I had to learn the hard way, for example, that the glass in the typical vanity mirror that you buy at the auto counter in a supermarket will fall off its base from the pounding and cut your passenger and at the other end of the economic scale, that those camper shells made from wood and aluminum sandwich won't stay glued together for even one trip. Hopefully, I can help you to avoid these sometimes expensive mistakes. □



# Letters to the Editor

Letters requesting answers must  
include stamped self-addressed envelope

## Toroweap Fan . . .

Thanks a heap for "Awesome Toroweap," by Bill Jennings. A great article, long past due. That fabulous Toroweap Point panorama receives too little honorable mention, and the roads to it too little attention.

A visit with John Riffey is worth the trip. When I asked him how far to the river by trail, he replied, "A mile and a half down and five miles back."

When you get there, crawl to the brink on your hands and knees; the air turbulence is tricky.

SMOKEY RICHARDS,  
Toquerville, Utah.

## Enjoys Planning with Desert . . .

I would like to congratulate the staff of *Desert Magazine* on your ability to consistently produce a quality, informative publication.

My interest in the desert goes back a long way. My partner, David Smith, and myself average approximately 15 trips to the southwest deserts annually, while enjoying our hobby of ghost town exploring and treasure hunting.

As in any endeavor which is successful, we find that planning is extremely important. Before we explore an area, we check pertinent facts out in numerous books we have accumulated on our area of interest.

Since I am an avid *Desert* fan, I have compiled a *Desert Magazine* index for the nearly 300 issues I have in your handsome binders. By pinpointing my area of interest it makes fact-finding simple, and helps me utilize your information-loaded magazine.

Your magazine never ceases to amaze me over the years. Its quality is unblemished. It is a fantastic research tool besides being a ball to read. Please keep up the good work, and don't change a thing!

ED ERICKSON,  
Mission Viejo, California.

# Calendar of Events

This column is a public service and there is no charge for listing your event or meeting—so take advantage of the space by sending in your announcement. We must receive the information at least three months prior to the event.

FEBRUARY 3 & 4, Everett Rock and Gem Club's 26th Annual Rock and Gem Show, Everett Masonic Temple, Everett, Washington. Admission free.

FEBRUARY 9-11, 1979, Annual Gold Rush Days Show and Sale, Wickenburg Gem & Mineral Society, Community Center, Wickenburg, Arizona. Free admission.

FEBRUARY 15-17, Scottsdale Gem and Mineral Club's 14th Annual "Western World of Gems" Show, Camelview Plaza, 6900 East Camelback Road, Scottsdale, Arizona. Dealer space filled. Chairman: Cliff Bruce, 8720 East Jackrabbit Rd., Scottsdale, Arizona 85253.

FEBRUARY 16-25, National Date Festival's "Gem and Mineral Show," sponsored by the Coachella Valley Mineral Society, Desert Gem and Mineral Society, San Geronio Gem and Mineral Society, Shadow Mountain Gem and Mineral Society. Fairgrounds, Highway 111, Indio, California. Information: Chuck Gage, National Date Festival, P.O. Drawer NNNN, Indio, Calif. 92201. Exhibit entries close January 23, 1979.

FEBRUARY 17 & 18, 1979, Tenth Annual Antique Bottle and Small Collectables Show and Sale of the Peninsula Bottle Collectors of San Mateo County, San Mateo County Fairgrounds, San Mateo, Calif. Admission and parking free.

FEBRUARY 17 & 18, 1979, "Gold 'n' Gems," hosted by Del Air Rockhounds Club, Inc., Hounds & Hammers, Marquardt Mineral & Lapidary Club, Sierra Pelona Rock Club, and VIP Gem & Mineral Society. 11th Annual Show, San Fernando Valley Gem Fair. Over 130 exhibits. Dealers, demonstrations, lectures. Free parking.

FEBRUARY 24 & 25, Santa Clara Valley Gem and Mineral Society 24th Annual Show, "Treasures of the Earth," Santa Clara County Fairgrounds, 344 Tully Rd., San Jose, Calif. Dealer space filled.

MARCH 2-11, Imperial Valley Gem and Mineral Society presents their 32nd annual show as part of the California Midwinter Fair at Imperial, California. Guided Field Trip to Old Mexico Saturday, March 10th. Parking across highway for campers. Admission charged to Fairgrounds.

MARCH 3 & 4, Monrovia Rockhounds, Inc., host their annual Gem and Mineral Show, Masonic Temple, 204 W. Foothill Blvd., Monrovia, California.

MARCH 17 & 18, "Earth Treasures," sponsored by the Stockton Lapidary and Mineral Club, Scottish Rite Temple, 33 West Alpine, Stockton, California. Demonstrations, dealer display and sales areas.

MARCH 17 & 18, 1979, 12th Annual River Gemboree "Copper Bonanza" sponsored by the Silvery Colorado River Rock Club, Junior High School, Hancock Road, Holiday Shores, Bullhead City, Arizona. Copper and associated mineral displays. Demonstrators, dealers, parking and admission free.

MARCH 17 & 18, 1979, the Northrop Recreation Gem and Mineral Club will present its 19th annual show, 2815 W. El Segundo Blvd., and Wilkie Avenue, Hawthorne, California. Parking and admission free. Dealer spaces filled.

MARCH 17 & 18, 1979, Monterey Bay Mineral Society of Salinas, Inc., presents their 32nd Annual Rock & Gem Show, Masonic Temple, 48 San Joaquin St., Salinas, California. Dealer space filled.

MARCH 18, 1979, Annual Desert Gardens Walk of the Anza-Borrego Committee, 11 a.m. at the new Visitor Center near Anza-Borrego Desert State Park headquarters. Tours of the building as well as audio-visual programs in the small auditorium. There will be archeology and paleontology demonstrations. Plant, wildflower, bird and general desert walks will be led by State Park Rangers. The Visitor Center is a short distance west of the community of Borrego Springs, Calif. Plenty of parking. Bring good walking shoes, sun-shade hat, lunch and water (for hikes). Information available at park office.

MARCH 24 & 25, 1979, "Stone Age '79" Show, sponsored by the Santa Ana Rock & Mineral Club, Laborers and Hodcarriers Union Hall, 1532 East Chestnut, Santa Ana, California.

APRIL 1, 1979, Orange Belt Mineralogical Society's 33rd Annual Gem and Mineral Show, National Orange Show Grounds, Hobby Building, San Bernardino, California. Dealers and demonstration workshop.

APRIL 7 & 8, 1979, Northside Gem & Hobby Club's annual Gem Show, Wendell High School Gymnasium, Wendell, Idaho. Demonstrations, exhibits.

APRIL 7 & 8, "Galaxy of Gems-Safari '79," sponsored by the Bellflower Gem and Mineral Society, Bellflower High School Auditorium, 15301 McNab Street, Bellflower, California. Free admission and parking. Slide show, dealers, displays, movies.

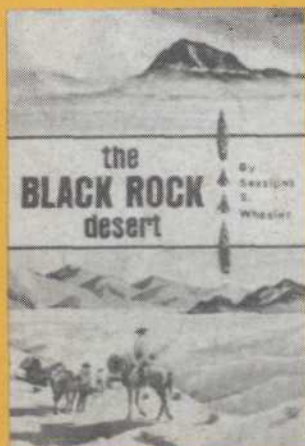


# GREAT READING From CAXTON PRINTERS

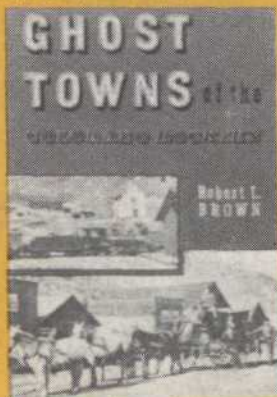
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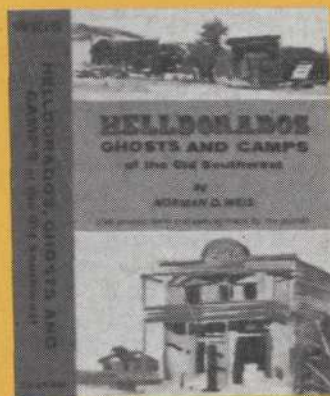
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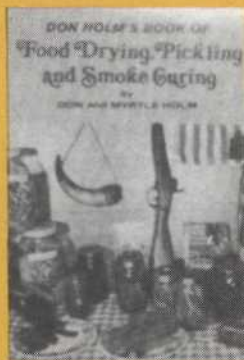
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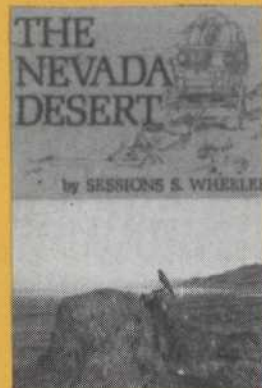
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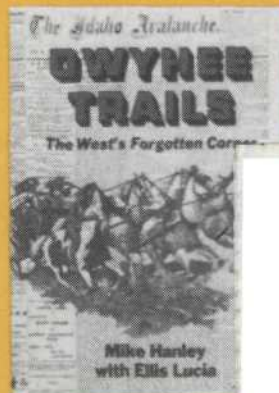
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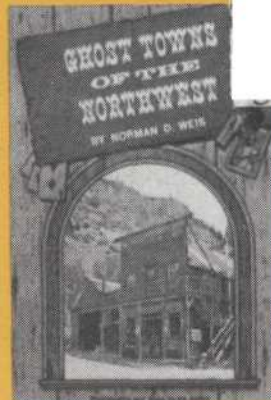
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